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UNIT 1: INVENTORIES: COST AND COST FLOW ASSUMPTIONS

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1.0 AIMS AND OBJECTIVES

This unit aims at discussing the basic issues involved in recording classifying, and valuing items classified as inventory.

After you have studied this unit, you will be able to:

- understand the meaning and characteristics of inventories;
- know the components of inventory cost;
- apply the periodic and perpetual inventory methods;
- recognize the various alternative cost flow assumptions used to value inventory, their effect on reported income, and the reasons for management's choice among the alternatives;
- apply the Money value last-in, first-out method (MV-LIFO) and understand the reasons management might elect to use it.

1.1 INTRODUCTION

Inventories consist of goods owned by a business and held either for use in the manufacture of products or as products awaiting sale. We typically think of inventories as raw materials, work in process, finished goods, or merchandise held by retailers. But depending on the nature of the company's business, inventory may consist of virtually any tangible goods or materials. An inventory might consist of component pieces of equipment, bulk commodities such as wheat or milling flour, fuel oil awaiting sale during the winter heating season, or unused storage space. Machinery and equipment, for example, are considered operational assets by the company that buys them, but before sale they are part of the inventory of the manufacturer who made them. Even a building, during its construction period is an inventory item for the builder.

Inventories are classified as

1. Merchandise inventory
2. Manufacturing inventory
 - a. Raw materials
 - b. Work in process
 - c. Finished goods
 - d. Manufacturing supplies
3. Miscellaneous inventory

Merchandise inventory represents goods on hand purchased for resale by a retailer or a trading company such as an importer or exporter for resale. Generally, goods acquired are not physically altered by the purchaser company; the goods are in finished form when they leave the manufacturer's plant. In some instances, however, parts are acquired and then further assembled into finished products. Bicycles that are assembled from frames, wheels, gears, and so on and sold by a bicycle retailer are examples.

Manufacturing inventory consists of several categories including:

- a. Raw materials inventory: tangible goods purchased or obtained in other ways (eg. By mining) and on hand for direct use in the manufacture of goods for resale parts or subassemblies manufactured before use are sometimes classified as component parts inventory.
- b. Work-in process inventory: goods requiring further processing before completion and sale. Work in process, also called goods-in-process, inventory includes the cost of direct material, direct labor, and allocated manufacturing overhead costs incurred to date. The term allocated overhead refers to non-traceable indirect expenses such as heat, light, and administrative salaries added to the cost of goods manufactured.

- c. Finished goods inventory: manufactured items completed and held for sale. Finished good inventory cost includes the cost of direct material, direct labor, and allocated manufacturing overhead related to its manufacture.
- d. Manufacturing supplies inventory: lubrication oils for the machinery, cleaning materials, and other items that make up an insignificant part of the finished product.

Miscellaneous inventories include items such as office, janitorial, and shipping supplies. Inventories of this type are typically used in the near future and are usually recorded as selling or general expense when purchased.

The major classification of inventories depend on the operation of the business. A retailing or wholesale entity acquires merchandise for resale. A manufacturing entity acquires raw materials and component parts, manufactures finished goods, and then sells them.

1.2 INVENTORY PROCEDURES

The physical quantities in inventory may be measured by use of either a periodic inventory system or a perpetual inventory system. Both systems may be employed simultaneously for various inventories, such as material, finished goods, and goods in process.

1.2.1 Periodic Inventory System

The periodic inventory system relies on a physical count of goods on hand as the basis for control, management decisions and financial accounting. Although this procedure may give accurate results on a specific date, there is no continuing record of the inventory.

Under this system, an actual physical count of the goods on hand is taken at the end of each accounting period for which financial statements are

prepared. The goods are counted, weighted, or otherwise measured, and the quantities are then multiplied by unit costs to value the inventory. An ongoing inventory record may, but need not, be kept of the units and amounts purchased or sold (or issued) and of the balance on hand purchases are debited to a purchases account, and end-of-period entries are made to close the purchases account, to close out beginning inventory, and to record the ending inventory as an asset (i.e. the ending inventory replaces the beginning inventory in the accounts)

Cost of goods sold is computed as a residual amount (beginning inventory plus net purchases less ending inventory) and for all practical purposes cannot be verified independently of an inventory count.

1.2.2 Perpetual Inventory System

The perpetual inventory system requires a continuous record of all receipts and withdrawals of each item of inventory. The perpetual record sometimes is kept in terms of quantities only. This procedure provides a better basis for control than is obtained under the periodic system. When the perpetual system is used, a physical count of the goods owned by the business enterprise must be made periodically to verify the accuracy of the inventories reported in the accounting records. Any discrepancies discovered must be corrected so that the perpetual inventory records are in agreement with the physical count.

The following table compares the periodic inventory system and the perpetual inventory system in a manufacturing environment.

Transaction or event	Periodic Inventory System	Perpetual Inventory System
1. Routine purchases of various inventory items.	All inventory items costs are debited to the purchases account regardless of the	

	particular items acquired.	
2. Items removed from inventory for use in production	No accounting entries are made	Individual credit entries are made to each inventory account (plus a combined credit to the inventory control account) with an offsetting debit entry to the work in process (W/P) account.
3. End-of-period accounting entries and related activities	Physical count of the ending inventory is taken and Money values are assigned. This activity is a prerequisite to computing the cost of good sold. Adjusting entries are made to compute the cost of goods sold (CGS) using the following formula: $\text{CGS} = \text{Beginning inventory} + \text{purchase} - \text{ending inventory}$	Physical count of inventory is not needed for calculation of cost of goods sold for the period, but such inventory counts are usually made in order to verify the accuracy of the perpetual system and to identify inventory overages shortages. Cost of goods sold is automatically determined from the sum of the daily posting to this account

Check Your Progress -1

- i. Define Inventory.

_____.

- ii. Explain the essential differences in accounting for inventories under the periodic and perpetual inventory system.

_____.

1.3 COST AND QUANTITY ACCUMULATION

At the date of acquisition, inventory items are recorded at their cash equivalent cost in accordance with the cost principle. Subsequently, when an item is sold, accounting records the cost of goods sold. Inventory items remaining on hand at the end of an accounting period are assigned an accounting value based on the cost principle except when their value has declined below cost because of damage, obsolescence, or a decrease in replacement cost.

1.3.1 Timing Errors in the Recording of Purchases and Sales

When the cost of goods available for sale during a specific accounting period is being accumulated, decisions frequently must be made as to whether certain goods become the property of the purchaser in the current period or in the succeeding period. If acquisition of goods are not recorded in the period in which they become the property of the purchaser, errors in the financial statements will result.

Three common types of timing errors in recording inventory purchases may occur. The errors and their effects on financial statements are:

1. A purchase is recorded properly, but goods are not included in the ending inventories. The result is to understate current assets and net income.

2. A purchase is not recorded, but goods are included in the ending inventories. The result is to state the assets properly but to understate current liabilities and to overstate net income.
3. A purchase is not recorded, and goods are not included in the ending inventories. Net income in this case is unaffected because both purchases and ending inventories are understated by the same amount, but both current assets and current liabilities also are understated.

The first two errors are most likely to occur when the periodic inventory system is used; the third type may occur under either the periodic or the perpetual system, but it is more likely to occur when the perpetual system is used. In most cases, timing errors are counter balanced in the following accounting period; however, the fact that the errors may be self-correcting does not remove the need for correct presentation of financial position and results of operations for each period.

1.3.2 Goods in Transit

Orders for goods that have not been filled by the seller present little difficulty for accountants. The orders that have been filled by the seller but not received by the purchaser are the crucial ones. The problem that must be resolved in these cases is to determine whether the goods in transit are the property of the purchaser or of the seller. The passage of title from the seller to the purchaser marks the time when the legal responsibility for the goods changes from one party to the other.

Contracts for purchases usually specify which party is responsible for goods and the exact location where the responsibility changes. This point usually is indicated by the letters "FOB", meaning "free on board," followed by the designation of a particular location, for example, "FOB Denver". This means that title is held by the seller until the goods are delivered to a common carrier in Denver that will act as an agent for the purchaser. Other

important FOB designations are “FOB destination”, which means that title passes at the purchaser’s plant, and “FOB shipping point,” meaning that title passes at the seller’s plant.

1.3.3 Consignment Goods

Consignment is a marketing arrangement where by the consignor (the owner of the goods) ships merchandise to another party, known as a consignee, who acts as a sales agent only. The consignee does not purchase the goods but assumes responsibility for their care and sale. Upon sale, the consignee remits the proceeds, less specified expenses and a commission to the consignor. Goods on consignment, because they are owned by the consignor until sold, should be excluded from the inventory of the consignee and included in the inventory of the consignor.

1.3.4 Goods on Installment Sales

When goods are sold on the installment plan, the seller usually retains legal title to the goods until full payment has been received; however, such goods are excluded from the inventories of the seller. The expectation is that customers will make payment in the ordinary course of business; therefore, strict adherence to the “passage of title” rule is not considered a realistic approach to the recording of installment sales transactions. In such case, the sales agreement, industry practices, and other evidence of intent should be considered.

1.3.5 Inventoriable Costs

Inventory cost is measured by the total cash equivalent outlay made to acquire the goods and to prepare them for sale.

For inventory items purchased from outsiders, the net invoice cost is the invoice price of the item less any cash (purchases) discounts available to the purchaser. Cash discounts should not be included in the inventory cost,

regardless of whether the purchaser takes advantage of the discounts or fails to do so.

In theory, if a specific cost is expected to contribute to the production of revenue, that cost should be associated with the goods acquired. Thus a theoretical justification exists for adding the indirect costs of ordering, freight-in, handling and storing to the net invoice cost to determine the total cost of goods acquired. However, the work involved in the allocation of these costs to inventories often exceeds the benefits derived from the increased accuracy in the valuation of inventories. Furthermore, the allocation of some indirect costs to goods acquired may be highly subjective.

Therefore, when costs are incurred that are necessary for the acquisition of goods but are not expected to produce future benefits or are not material in amount, the costs usually are not included in inventories. Instead, such costs are considered period costs to be deducted from current revenue.

For manufacturing inventories the cost is determined in almost the same way for merchandise inventories. This is particularly true of material and other purchased inventorable items. The major difference is found in the measurement of the cost of finished goods and work in process. Tracing the movement of goods and costs through the production process often is difficult, but if it is done with reasonable care, the resulting information is useful to management and outsiders.

As stated earlier, four classes of inventory usually are found in a manufacturing enterprise. The cost of these inventories emerge as a part of the general process of the measurement of the costs of the three elements (direct material, direct labor, and factory overhead) that flow through the manufacturing process, and of the tracing of these costs to specific quantities of partially finished and finished products as illustrated below:

Direct material
Direct labor } → goods in process → finished goods
Factory overhead

Check Your Progress -2

- i. At the end of the accounting period, the following purchases invoices dated December 27 are on hand, but the goods have not been received. How would you treat each invoice in the determination of the ending inventories?
 - a. Invoice amount, Br. 12, 670; term 2/10, n/30; “FOB shipping point”
 - b. Invoice amount, Br. 14, 860, terms 1/5, n/30, “FOB destination”
- ii. Dallol Company had goods costing Br. 30, 000 on consignment from Galaxy Company on June 30, 1990, the end of Dallol Company’s fiscal year. How should the consigned goods be treated in Dallol Company’s June 30, 1990, physical inventory under the periodic inventory system?

1.4 COST FLOW ASSUMPTIONS

The term cost flow refers to the inflow of costs when goods are purchased or manufactured and to the outflow of costs when goods are sold. The cost remaining in inventories is the difference between the inflow and outflow of costs. During a specific accounting period, such as a year or a month, identical goods may be purchased or manufactured at different costs. Accountants then face the problem of determining which costs apply to items in inventories and which applies to items that have been sold.

The assumed flow of costs to be used in the assignment of costs to inventories and to goods sold need not conform to the physical flow of goods. Cost flow assumption relate to the flow of costs, rather than to the physical flow of goods. The question of which physical units of identical

goods were sold and which remain in inventories is not relevant to income measurement and inventory valuation.

1. First-in, First-out method (FIFO)
2. Last-in, First-out method (LIFO)
3. Weighted-average method
4. Specific identification method

All methods of inventory valuation are based on the cost principle; no matter which method is selected, the inventory is stated at cost. In selecting an inventory valuation method (or cost flow assumption), accountants are matching costs with revenue, and the ideal choice is the method that “most clearly reflects periodic income.”

1.4.1 First-In, First-out method (FIFO)

The FIFO method treats the first goods purchased or manufactured as the first units costed out on sale or issuance. Goods sold (or issued) are valued at the oldest unit costs, and goods remaining in inventory are valued at the most recent unit cost amounts. FIFO can be used with either a periodic or a perpetual inventory system, and no attempt is made to match the specific cost incurred in purchasing or manufacturing specific inventory unit items with the revenue from the sale of the item.

Application of FIFO with a perpetual inventory system requires the maintenance of inventory layers by unit costs throughout the period in order to assign the appropriate cost to each issue or sale.

To illustrate the application of the inventory costing methods, assume the following data for the month of January relating to item Y in the inventories of Gaky Company.

Transaction Date	Units
------------------	-------

	<u>Purchased</u>	<u>Sold</u>	<u>On Hand</u>
January 1, Inventory@Br 1.00			200
January 9 Purchases@Br 1.10	300		500
January 10 Sales		400	100
January 15 Purchases@Br 1.16	400		500
January 18 Sales		300	200
January 24 Purchases@Br 1.26	100		300

Beginning inventory cost.....200 x Br. 1 =
Br. 200

Purchases.....300 x Br. 1.10 = Br. 330

400 x Br. 1.16 = 464

100 x Br. 1.26 = 126 920

Cost of goods available for sale.....Br.
1, 120

Using the above data, the cost of ending inventory and the cost of goods sold is determined under the periodic inventory system as follows:

Beginning inventory (200 units at Br. 1).....Br.
200

Add: purchases during the
period.....920

Cost of goods available for sale.....Br. 1,
120

Dedu: Ending inventory (300 units per physical inventory count):

100 units at Br. 1.26 (most recent purchases -Jan. 24)..... Br. 126

200 units at Br. 1.16 (next most recent purchase -Jan15).....232

Total ending inventory cost.....
.....358

Cost of goods sold (or issued).....Br
762

Under the perpetual inventory system, the cost of ending inventory and cost of goods sold using FIFO inventory costing is determined as follows:

Date	Purchases			Sales (Issues)			Inventory Balance		
	Units	Unit Cost	Total Cost	Unit	Unit Cost	Total Cost	Units	Unit Cost	Total Cost
Jan. 1							200	Br. 1.00	Br. 200
Jan. 9	300	Br. 1.10	Br. 330				200 300	1.00 1.10	Br. 200 330
Jan. 10				200 200	Br. 1.00 1.10	Br. 200 220	1.00	1.10	110
Jan. 15	400	1.16	464				100 400	1.10 1.16	110 464
Jan. 18				100 200	1.10 1.16	110 232	200	1.16	232
Jan. 24	100	1.26	126				200 100	1.16 1.26	232 <u>126</u>
End. Inventory cost of goods sold.	-----	-----	-----	-----	-----	<u>Br. 762</u>	-----	-----	Br. <u>358</u>

The FIFO method gives the same result whether the periodic or perpetual inventory system is used because each withdrawal of goods is from the oldest stock on hand.

1.4.2 Last-in, First-out method (LIFO)

The LIFO method assumes a flow of inventory costs based on the assumption that the most recently purchased goods are sold first, because current costs are incurred to make current sales and to maintain adequate inventories on hand. Under this view, the latest costs are most closely

associated with current revenue; thus, the matching principle of income measurement is carried out. In the balance sheet, inventories under the LIFO method are valued at the earliest costs incurred.

Unlike the FIFO method, the LIFO method does not produce the same result when the perpetual inventory system is used. When the perpetual system is used, each withdrawal must come from the most recent purchase; however, this may mean that items may be withdrawn from the beginning inventory or the earliest purchase when purchases lag behind sales.

Using the data for Gaky Company, the cost of ending inventory and cost of goods sold under the perpetual system using LIFO is determined as follows:

Cost of goods available for sale.....	Br. 1,120
Deduct: Ending inventory (300 units per physical inventory count):	
200 units at Br. 1 (oldest costs available, form Jan 1. inventory)	
Br. 200	
100 units at Br. 1.10 (next oldest costs available, from Jan 9 purchase)	
..... 1.10	
Ending inventory.....	310
Cost of goods sold.....	Br. <u>810</u>

Using perpetual inventory system, the costs are determined as

	Purchases			Sales (issues)			Inventory		
Date	Units	Unit Cost	Total Cost	Units	Unit Cost	Total Cost	Units	Unit Cost	Total Cost
Jan. 1							200	Br. 1	Br. 200
9	300	Br. 1.10	Br. 330				200 300	1 1.1	200 330
10				Br. 300	Br. 1.1 1	Br. 330 100	100	1	100

				100					
15	400	1.16	464				100	1	100
							400	1.16	464
18				300	1.16	348	100	1	100
							100	1.16	116
24	100	1.26	126				100	1	100
							100	1.16	116
							100	1.26	126
Ending inventory-----									Br. 342
Cost of goods sold-----Br. <u>778</u>									

The LIFO inventory concept is applied in several ways including:

1. Unit-LIFO method
2. Money-value LIFO method

Unit-LIFO method

The practical problems of determining the cost of inventory under the LIFO procedure may be overwhelming, especially without the aid of a computer. When there are large numbers of similar items and numerous transactions, the weighted-average unit cost of the items purchased during an accounting period is considered the cost for purpose of pricing additions to inventory for the period. Such a procedure eliminates the need for identifying the cost of particular units. This adaptation is used in conjunction with the periodic inventory system and is called the unit-LIFO method. Given the data for Gakycompany, the unit-LIFO inventory on January 31 is computed below:

Gaky Company

Inventory of item Y: unit-LIFO method

Beginning inventory.....	200 units @ Br. 1.00.....	Br. 200
Layer added in January.....	<u>100 units</u> @ 1.15 *	<u>115</u>
Totals.....		<u>315</u>

* Computation of weighted average unit cost for units acquired in January:

Cost of purchases.....	Br. 920
Total units purchased in January.....	<u>800</u>



Weighted average unit cost of purchases (Br. 920	800)	Br. 1.15
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The unit-LIFO method is applied only when there is an increase in the inventory during an accounting period. The layer added in January retains its identity in subsequent months as long as the inventory consists of 300 units or more.

Money-value LIFO method

The determination of LIFO cost for a single inventory item is not difficult. However, a business enterprise that has several product lines consisting of numerous items in its inventories would have difficulty in applying LIFO cost to each of the individual items, especially if the earliest costs dated back many years. Such an enterprise may use the Money-value LIFO inventory method to simplify the application of LIFO procedures.

Under Money-value LIFO inventory item constituting a single product line or otherwise having similar characteristics are accumulated in pools. Individual items in each pool are assigned LIFO costs. The total LIFO cost of each pool becomes base-year cost for that pool, with a cost index of 100.

Total base-year costs for all pools constitutes the LIFO inventories on the date of adoption of the Money-value LIFO method.

Subsequent ending inventories in each pool are valued first at current cost; total current cost then is converted to equivalent base-year cost by use of the appropriate cost index. Any increase in the ending inventory for each pool, in terms of base-year costs, is valued at costs prevailing during the current year. In practice, the cost index as of the end of the current year is used to value the added layer; practical limitations of computing several indexes during a year have led to this procedure. A decrease in the ending inventory for each pool in terms of base-year cost is deducted from the most recent layer added to the inventory, at the costs prevailing in the year in which the layer was added. Thus, Money-value LIFO measures changes in inventories in terms of dollar amounts rather than in terms of units.

To illustrate the steps involved in the application of MV LIFO assume the following information for Dashen Company.

Dashen Company initially adopted Money-value LIFO on December 31, 1997, the base period. Assume Dashen Company's inventories on that date were valued at \$24, 000. The firm's current inventories as of December 31, 1998, valued using December 31, 1998, (that is current) prices, are \$27, 060. Finally suppose price have increased 10 percent during 1998. The base year price index is defined as 100% or 1.

1. Convert the ending inventory at current cost to base year dollars

$$\text{Ending inventory} = \text{Ending inventory} \times \frac{\text{Base year index}}{\text{Year end index}}$$

base year dollars at current cost

$$\begin{array}{rclcl} \$ 24, 600 & = & 27, 060 & \times & \frac{1.00}{1.10} \end{array}$$

2. Determine the change in base year dollars (to determine whether there is a physical change in inventory).

$$\text{Change in inventory} = \text{Ending inventory} - \text{Beginning inventory}$$

$$\text{in base year dollars} \quad \text{base year dollars} \quad \text{base year dollars}$$

$$\$ 600 = \$ 24, 600 - 24, 000$$

3. Compute the increase in inventory in current year prices (this procedure is different when there is a decrease in step 2)

$$\text{Increase in inventory} = \text{increase in inventory} \times \frac{\text{Base-year index}}{\text{base-year index}}$$

$$\text{in current year dollars} \quad \text{in base year dollars}$$

$$\$660 = \$24, 000 \times$$

$$\frac{1.10}{1.00}$$

4. Determine the ending inventory in MV-LIFO

$$\text{Ending inventory} = \text{Beginning inventory} + \text{Increase in inventory}$$

$$\text{MV LIFO} \quad \text{MV LIFO} \quad \text{in current year dollars}$$

$$\$ 24, 660 = \$24, 000 + \$ 660$$

5. Compute the cost of goods sold (Assume Dashen's net purchases were \$ 44, 000)

$$\text{Cost of goods sold} = \text{Beginning inventory} + \text{Net purchases} - \text{Ending inventory}$$

$$\begin{array}{ccccccc} & & \text{MV-LIFO} & & \text{MV-LIFO} & & \\ \$ 43, 340 & = & \$ 24, 000 & + & 44, 000 & - & \$ 24, 660 \end{array}$$

There are four techniques for applying the Money-value LIFO method:

- i) Double-extension
- ii) Link-chain
- iii) Index
- iv) Retail

These techniques differ primarily in the computation of the cost indexes.

i. Double Extension Money-value LIFO

Under this technique, the ending inventories subsequent to the base year for each pool are computed with two values current cost and base year cost. The ratio of total current cost to total base year cost is the pool's cost index for the year, and is used to value any increase (LIFO layer) in the pool for that year. The term "double-extension refers to the two computations of quantities times unit costs.

To illustrate, assume that on December 31, 1992, Dolfin Company adopted the Money-value LIFO method, with the double extension technique, for costing its two inventory items A and B, which constitute a single pool. Details of quantities and unit costs for the two items on December 31, 1992 through 1995 follow:

Dolfin Company Quantities and unit cost of inventory items December 31, 1992 through 1995						
Items	Quantities on December 31				unit	costs on
December 31						
	1992	1993	1994	1995	1992	1993
1994 1995						
A	4,000	5,000	6,000	5, 600	\$3	\$3.6
\$3.9 \$4.2						

B	6, 000	8, 000	9, 000	8, 400	4	4.8
5.2	5.6					

* December 31, 1992, unit cost is LIFO cost, unit costs on December 31, 1993 through 1995, are current costs.

Compute cost indexes for 1993, 1994 and 1995 using double-extension technique.

Solution: -

Item	Quantity	<u>Unit Cost</u>		<u>Total Cost</u>	
		Current Year	Base Year	Current Year	Base Year
December 31, 1993					
A.....	5, 000	\$ 3.6	\$3	\$ 18, 000	\$ 15, 000
B.....	<u>8, 000</u>	4.8	4	<u>38, 400</u>	<u>32, 000</u>
Totals.....	13, 000			\$56, 400	\$47, 000



Cost Index: \$ 56, 400 / \$47, 000 = 1.20 or 120%

December 31, 1994:

A	6, 000	\$3.9	\$3	\$23, 400	\$18, 000
B	<u>9, 000</u>	5.2	4	<u>46, 800</u>	<u>36, 000</u>
15, 000		<u>70, 200</u>		<u>\$54, 000</u>	

Item	Unit Cost	Total Cost	Current Year
Base Year	Cost Index = \$70, 200 / \$54, 000 = 1.30		

December 31, 1995

A	5, 600	\$4.2	\$3	\$23, 520	\$16, 800
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B	<u>8,400</u>	5.6	<u>447,040</u>	<u>33,600</u>
	<u>14,000</u>		<u>\$70,560</u>	<u>\$50,400</u>

Cost index: \$70,400 = 1.40 or 140

(2) Compute the ending inventories by the Money value LIFO method using double-extension technique

	Inventories at	Determination of	Money value
LIFO			
December 31	Base year costs	Inventory layers	
Inventories at year-end			
1992	\$36,000 (4000 x \$3 + 600 x 4)	\$36,000 x 1 =	\$36,000
1993	47,000	\$36,000 x 1 =	\$36,000
		<u>11,000 x 1.2 = 13,200</u>	
		<u>\$47,000</u>	<u>\$49,200</u>
1994	54,000	\$36,000 x 1	\$36,000
		11,000 x 1.2	13,200
		7,000 x 1.3	9,100
		<u>\$54,000</u>	<u>\$58,300</u>
1995	\$50,400	\$36,000 x 1	\$36,000
		11,000 x 1.2	13,200
		3,400 x 1	4,420
		<u>\$50,400</u>	<u>\$53,620</u>

The decrease in the ending inventories, in terms of base-year costs, is \$3,600 (\$54,000 - \$50,400). This decrease, termed a LIFO liquidation, is attributed to the 1994 LIFO layer, in accordance with LIFO cost flow assumption. Thus, the residual 1994 LIFO layer, in terms of base year costs, is \$3,400 (7,000 - 3,600). The 1995 cost index of 140% is not used in the computation of the Money value LIFO inventories on December 31, 1995, or at any subsequent year-end, because no LIFO layer was added in 1995.

ii. Link-chain Money-value LIFO

This technique is a variation of the double-extension technique in which beginning-of-year costs, rather than base-year costs, are used to compute the denominator for the computation of the cost index for each year subsequent to the base year. Each successive year's cost index is multiplied by the preceding year's cost to obtain a cumulative cost index through a chain technique. The cumulative cost indexes are used to compute the Money-value amounts of the LIFO layers for the years to which they relate. If there were no changes in the items comprising a specific inventory pool during a year, the cost index computed by the double extension would be identical to the cumulative cost index computed by the link-chain technique.

Using the data given for Dolfen Company, compute the cumulative cost indexes by the Link-chain technique

Item	<u>Unit Cost</u>		<u>Total Cost</u>	
	Quantity	End-of-Year	Beginning-of- Year	End-of-Year
Beginning-of-Year				
December 31, 1993				
A	5, 000	\$3.6	\$3	\$18, 000
				\$15, 000
B	<u>8, 000</u>	4.8	<u>4 38, 400</u>	<u>32, 000</u>
			<u>\$56, 400</u>	<u>\$47, 000</u>



Cost index for the year = $\frac{\$56, 400}{\$47, 000} = 1.20$ or 120%

Cumulative (link-chain) cost index: $1.20 \times 1.00 = 1.20$ or 120%

Dec. 31, 1994:

A	600	\$3.9	\$3.6	\$23, 400	\$21, 600
B	<u>9, 000</u>	5.2	4.8	<u>46, 800</u>	<u>43, 200</u>

15,000

\$70,200

\$64,800



Cost index for the year = 70,200

\$64,800 = 1.083 or 130

Dec. 31, 1995

A	5,600	\$4.2	\$3.9	\$23,520	\$21,840
---	-------	-------	-------	----------	----------

B	<u>8,400</u>	5.6	5.2	<u>47,040</u>	<u>43,680</u>
---	--------------	-----	-----	---------------	---------------

14,000

\$70,560

\$65,520



Cost index for the year = \$70,560

108%

\$65,520 = \$1.077 or

Cumulative (Link-Chain) cost index = $1.08 \times 1.30 = 1.40$ or 140%

Because there were no changes in the items comprising Dolfin Company's inventory pool during the three years ended December 31, 1995, the cumulative cost indexes computed above are identical to those computed by the double-extension technique. Thus, the Money-value LIFO inventory amounts would be identical to those under the double-extension Money value LIFO approach.

If a new product had been included in Dolfin's December 31, 1995, inventory pool, for example, a base-year cost for the new product would be obtained or simulated for use in the double-extension technique, but the January 1, 1995, cost would be used for the new product in the link-chain technique.

iii. Index Money-value LIFO

For a business enterprise having numerous inventory pools, both the double-extension and the link-chain techniques may involve numerous computations to derive appropriate cost indexes. Such enterprise may

choose to use specific cost indexes published by different government body that are appropriate for the enterprise's inventory pools or an accountant may take samples of the inventory pools and value the samples at both current-period prices then is divided by the total cost in terms of the base period prices. The cost-index thus determined is used to value the entire inventory pool.

The key feature of the Money-value LIFO method, regardless of the techniques used to determine cost indexes, is the conversion of the beginning and ending inventories of each pool to base-year costs. The difference between the two converted inventory amounts indicates the increase or decrease in the inventory expressed in terms of base-year costs. The LIFO layers were added to the inventory.

Base Stock Method

This method is similar to LIFO, but, because it is not acceptable for income tax purposes and has little theoretical support, it seldom is used in practice. This method assumes a continuous existence of a minimum stock of goods, the cost of which is considered to be a permanent asset. Any excess over the base stock is considered a temporary increase and is priced at current replacement costs; any decrease in the base stock is considered to be temporary and is assigned to cost of goods sold at current replacement costs.

1.4.3 Weighted-Average Method

This method of inventory valuation is based on the assumptions that all goods are commingled and that no particular batch of goods is retained in the inventories. Thus, the inventories are valued on the basis of average prices paid for the goods, weighted according to the quantity purchased each period.

Cost of goods available for sale.....	Br. 1, 120
Total units available for sale.....	100



Using the data for Gaky Company the moving-weighted average method is illustrated below:

[illegible]

$$\begin{array}{rcl}
 & \text{①} & \\
 * \text{ Br. 530} & & 500 = \text{Br. 1.06'}
 \end{array}$$

$$\begin{array}{rcl}
 & \text{②} & \\
 + \text{ Br. 570} & & 500 = \text{Br. 1.14}
 \end{array}$$

$$\begin{array}{rcl}
 & \text{③} & \\
 ++ \text{ Br. 354} & & 300 = \text{Br. 1.18}
 \end{array}$$

The weighted average method produces a result, for both inventory valuation and income measurement, that lies between the results achieved under FIFO and those achieved under LIFO. The weighted average method does not produce an inventory value consistent with the current cost of the items in inventory; by its nature it lags behind market prices. During a period of rising prices the inventory cost tends to be below replacement cost; during a period of falling prices it tends to be above replacement cost.

1.4.4 Specific Identification Method

At first thought one might argue that each item of inventory should be identified with its actual cost and that the total of these amounts should constitute the inventory value. Although such a technique might be possible for a business enterprise handling a small number of items, for example, an automobile dealer, it becomes completely inoperable in a complex manufacturing enterprise when the identity of the individual item is lost. Practical considerations thus make specific identification inappropriate in most cases.

Even when specific identification is a feasible means of valuation, it may be undesirable from a theoretical point of view. The method permits income manipulation when there are identical items acquired at varying prices. By choosing to sell the item that was acquired at a specific cost, management may cause material distortions in income.

Check Your Progress -3

- i. Identify the four techniques for applying the Money-value LIFO method of inventory valuation?

_____.

- ii. What objections may be raised to the use of specific identification method for the valuation of inventories?

_____.

1.5 INVENTORY VALUATIONS AND INFLATION

Although both LIFO and FIFO are accepted inventory valuation methods, they may lead to significant differences in the financial statements during a period of inflation. Neither method achieves an entirely satisfactory reporting of both inventories and cost of goods sold when prices are going up.

1.5.1 Effect on working Capital and Net Income

The LIFO method has the effect of assigning the most recently incurred costs to inventories, whereas the LIFO assumption assigns the first costs incurred to inventories. During periods of rising price levels, inventories

valued on the FIFO basis approximate more closely the current cost of the inventories; the cost of items valued at LIFO basis are less than the current cost of the inventories; the cost of items valued at LIFO basis are less than the current cost. The difference between the inventories valued at LIFO and at current cost depends on the magnitude of the price level increases. The LIFO method produces a seriously distorted inventory valuation when it is used over a long period during which the price level increases steadily or when the price level increases rapidly.

The understatement of inventories resulting from the use of LIFO method is objectionable because of the effect on working capital, current ratio, and inventories turnover rate. The problem is rather serious if no indication is included in the financial statements of the degree of understatement. The advocate of LIFO minimizes the importance of this understatement by arguing that the income statement is more important than the balance sheet. They argue that a more accurate measure of net income may justify a less meaningful balance sheet.

Proponents of the LIFO method argue that realized revenue should be matched with the cost of acquiring goods at or near the time the revenue is realized. They contend that during periods of rising prices, for example, two types of profits, inventory profits and operating profits, may be included in net income, unless diligence is exercised to avoid the inclusion of inventory profits. Inventory profits arise as a result of holding inventories during periods of rising inventory costs, and are measured by the difference between the original cost of goods sold and their current cost at the time of sale. Operating profits result from sales of a product at a price above current cost. Because the LIFO method matches the most recently incurred costs with realized revenue, it tends to include inventory profits from net income. Supporters of LIFO favor the exclusion of inventory profits from net income, on the premise that inventories that are sold must be replaced and that inventory profits are fictitious and illusory.

Those supporting the LIFO method of inventory valuation agree that there may be two types of profits, but they consider both to be an element of income realized at the time of sale. They argue that if the proponents of LIFO are interested in measuring real rather than monetary income, they should extend their proposal to use current costs to value all assets. The cost of goods sold should not be the most recently incurred costs but rather the costs that will be incurred to replace the items that have been sold. This method has been referred to as the next-in, first-out (nifo) method of inventory valuation. At the present time, the next-in, first-out method is not acceptable, because it violates the cost principle.

1.5.2 Managerial and Income Tax Implications

The proponents of LIFO argue that this method is an invaluable aid of management because it excludes inventory profits from net income. External factors that are beyond the control of management often creates inventory profits. Moreover, inventory profits are reinvested in inventories, which means that disposal (spendable) income is measured more accurately by the use of LIFO

FIFO advocates agree that management may need information about the current cost of the inventory and its effect on net income; however, they maintain that this information may be compiled without distorting working capital and net income. Moreover, they argue that if the inventory profits are excluded from net income, similar profits derived from other investments also should be excluded. It management decisions regarding dividend declarations, wage negotiations, and prices are based on the concept of disposable income, a more extensive modifications of the determination of net income caused by LIFO liquidations. When these occur, cost of goods sold includes costs that may differ significantly from current costs.

Despite the theoretical arguments in support of LIFO, the dominant reason for its popularity is the income tax benefits that result from the use of this method. During period of rising prices, taxable income and income taxes are reduced through the use of LIFO. If prices later fall to the level at the time LIFO was adopted, this reduction is simply a deferral of taxes. If prices continue to rise, the reduction will be permanent. In either case, the LIFO user gains, because a postponement of taxes has economic value.

The income tax benefits of LIFO are not guaranteed. If prices fall below levels at the time LIFO was adopted, or if the quantity of inventories is reduced below the amount on hand at the inception of LIFO, it is conceivable that the LIFO method could produce a tax disadvantage. Before adopting LIFO solely for income tax reasons, management should consider such factors as the expected course of prices, future income tax rates, inventory fluctuations, etc.

1.6 VALUATION OF INVENTORIES AT LOWER OF COST OR MARKET (LCM)

The LCM requires that inventories be priced at the lower of cost price or market price. The benefits attributed to this method of inventory valuation are (1) the loss, if any, is identified with the accounting period in which it occurred, and (2) goods are valued at an amount that measures the expected contribution to revenue of future periods. The following principle supports the LCM rule:

A departure from the cost basis of pricing the inventory is required when the utility of the goods is no longer as great as its cost. When there is evidence that the utility of goods, in their disposal in the ordinary course of business, will be less than cost, whether due to physical deterioration, obsolescence, changes in price levels, or other causes, the difference should be recognized as a loss of the current period. This is generally accomplished by stating such goods at a lower level commonly designated as market.

In the expression lower of cost or market, the word market refers to replacement cost, with certain limitations. Replacement cost is a broader term than purchase price because it includes incidental acquisition costs. Replacement cost also may be applied to manufactured inventories by reference to the prevailing prices for direct material, direct labor, and factory overhead. If replacement cost is not reasonably determinable or exceeds the amount expected to be realized by the sale of the item, net realizable value is used instead of replacement cost.

Certain constraints govern application of the LCM inventory valuation method. While market usually may be interpreted to mean the current replacement cost of the inventory (its so-called first-level definition), two constraints establish a second-level definition:

1. **Ceiling:** Market should not exceed the net realizable value of the inventory. Net realizable value is defined as the estimated selling price of the goods in the ordinary course of business less reasonable predictable cost of completion and disposal.
2. **Floor:** Market should not be less than the net realizable value reduced by an allowance equal to the approximate normal profit margin. A normal profit margin is that profit margin, expressed as a percentage achieved on the item or on similar items in normal circumstances.

Replacement cost is used as “market” price if it falls between the ceiling and the floor; the ceiling amount is used as “market” price when replacement cost is above the ceiling; and the floor amount is used as “market” price when replacement cost is below the floor.

When the ceiling, replacement cost, and floor amount are ranked from highest to lowest, the amount in the middle is used as the “market” price. Once the adjusted amount for the market price is determined, the final step is to compare the cost of the inventory item with the adjusted market price

to determine the LCM valuation. Assume the following data for Abay Company to illustrate the concept of the LCM to inventories:

Item	Cost	Replacement cost	Selling Price	Cost of Completion	Normal profit
A	20.5	Br. 19	Br. 25	Br. 1	Br. 6
B	26	20	30	2	7
C	10	12	15	1	3
D	40	55	60	6	4
E	15	10	11	2	2

Given the above data, determine the lower of cost or market.

Solution: -

Item	Cost	Replacement Cost	(1) Selling Price	(2) Cost of Completion	(3) Normal Profit	4(1-2) Ceiling floor	5(4-3) market LCM
A	Br. 20.5	Br. 19	Br. 25	Br. 1	Br. 6	Br. 24	Br. 18
B	26	20	30	2	7	28	21
C	10	12	15	1	3	14	11
D	40	55	60	6	4	54	50
E	15	10	11	2	2	9	7

The LCM rule may be applied to

- (1) each individual item in inventories
- (2) major categories of inventories
- (3) inventories as a whole

Using the data given above for Abay Company the LCM method is applied to each item in inventories, major categories of inventories and inventories as a whole are as follows:

Inventory Categories	Cost	Market	Item by item	Category of inventories	Inventories as a whole
whole	Item A.....	Br. 20.5	Br. 19	Br. 19	

No.1	B.....	26	21	21	
	C.....	<u>10</u>	<u>12</u>	<u>10</u>	
Sub total.....	Br. 56.5		Br. 52		Br. 52
No. 2 {	Item D.....	40	54	40	
	E.....	<u>15</u>	<u>9</u>	<u>9</u>	
Sub total		Br. <u>55</u>	Br. <u>63</u>		Br. 55
Totals.....	Br. 111.5		115		Br. <u>111.5</u>
Valuation of inventories			Br. <u>90</u>		Br. <u>107</u>
	Br. <u>111.5</u>				

Regardless of which of the three methods is adopted, each inventory item should be priced at cost and at market as a first step in the valuation process. The item-by-item method produces the inventory value, the application of the LCM rule to inventories as a whole produces the highest value.

For financial accounting, it is advisable to apply the LCM rule to inventories as a whole.

In the valuation of inventories for a manufacturing enterprise, goods in process and finished goods inventories must be adjusted for any decline in the price of material, direct labor, and factory overhead costs.

When inventories are written down below cost, the reduction may be credited to an inventory valuation account. This procedure accomplishes the objective of a write-down, and at the same time permits the cost of the inventory to be reported in the balance sheet. Use of a valuation account is especially appropriate with the perpetual inventory system, because it eliminates the necessity of adjusting the detailed inventory records (maintained at actual costs) to lower market prices. For example, the journal entry to record the reduction of inventories at the end of year 1 from a cost of Br. 100, 000 to a market valuation of Br. 92, 000 is illustrated below:

Cost of goods sold (or Loss from price decline

in inventories.....8, 000 (Br. 100, 000 – Br. 92, 000)

Allowance for price decline in inventories.....
....8, 000

The inventory valuation allowance is not needed after the goods in question are sold. Therefore, at the time the cost of beginning inventories is transferred to Income summary (or to the cost of goods sold ledger account), the allowance account also is closed, to reduce the cost beginning inventories to market value. For example, the following journal entry is made at the end of year to close beginning inventories, assuming that the periodic inventory system is used:

Income Summary.....92, 000
Allowance for price decline in inventories.....8, 000
Inventories (beginning).....100, 000

If the market value of inventories at the end of year 2 is below cost, an allowance for price decline in inventories again should be established.

An inventory allowance account is used by some business enterprises to reduce inventories from FIFO or average cost to a LIFO basis. Such an account is established by a debit to cost of goods sold or Income summary and a credit to allowance to reduce inventory to LIFO basis. The valuation allowance, sometimes referred to as a LIFO reserve account, is used to preserve inventory cost on the FIFO or average cost basis for internal accounting purposes while obtaining the advantages of using LIFO for income tax purposes. To illustrate assume ending inventories for Fast corporation for 1994 (year of adoption of LIFO), 1995, and 1996 are as follows under both LIFO and FIFO bases. (Fast Corporation maintains its detailed internal inventory records on a FIFO basis)

	1994	1995	1996
LIFO.....	Br. 10, 000	Br. 12, 000	Br. 11, 500

FIFO.....	15, 000	18, 000	16, 700
Difference	Br. 5, 000	Br. 6, 000	Br. 5, 200

Journal Entries

1994

Cost of goods sold.....	5, 000
Allowance to Reduce Inventory to LIFO Basis.....	5, 000

1995

Cost of goods sold.....	1, 000
Allowance to Reduce Inventory to LIFO Basis.....	1, 000

1996

Allowance to Reduce Inventory to LIFO Basis.....	800
Cost of goods sold.....	800

Valuation of purchase commitments at LCM

If at the end of an accounting period a business enterprise has a contract to purchase goods at a fixed price that is higher than the current price of the goods, a loss, a loss should be recognized. In other words, the outstanding purchase commitment should be valued on a lower of-cost-or-market basis by recognition of a current loss and the accrual of current liability.

The lower-of-cost-or-market rule is applicable to price declines that actually have occurred, not to possible future price declines. Only actual costs on goods included in inventories that arise from price declines should be included in net income; possible future losses should not be entered in the accounting records.

Check Your Progress -4

- (i) Define the term market as used in the inventory valuation procedure referred to as LCM rule

1.7 REPORTING INVENTORIES IN THE BALANCE SHEET

The objective of reporting inventories in the balance sheet are to reveal the type, the relative liquidity, and the basis of valuation of the inventories. In reporting the investment in inventories, as in reporting other assets, accountants are concerned with disclosing all significant information; they are particularly concerned that the investment in inventories has been determined on a basis consistent with that of preceding years. If a change is made in the method of determining inventory cost, the change should be explained fully as to its effect on the current and prior years' financial statements.

When a valuation account is used as a means of valuing the inventory at the LCM or on the LIFO basis, this account is subtracted from inventory cost in the balance sheet.

Financial accounting standards require that the various categories of inventories be indicated under the general caption "Inventories", and that the basis of valuation and the method of determining costs be disclosed.

The security and exchange commission requires companies using the LIFO method of inventory valuation to disclose the excess of replacement or current cost over the stated LIFO values of inventories and the effect of material LIFO liquidation on net income.

Inventories that have been pledged as collateral for loans are included in the inventories section rather than being offset against the loans secured by the inventories. Such financing agreements are described in a note to the financial statement. Firm purchase commitments also are disclosed in a note to the financial statements. Most business enterprises report inventories in a single amount, accompanied by an explanatory note.

Check Your Progress -5

(1)What objectives do accountants seek to achieve in reporting inventories in the balance sheet of business enterprise?

_____.

1.8 SUMMARY

Inventories are asset items held for sale in the normal course of business or goods that will be used or consumed in the production of goods to be sold. Merchandise inventory refers to the goods held for resale by trading concern. The inventory of a manufacturing concern is composed of raw materials; work in process, finished goods and manufacturing supplies.

Inventory records may be maintained on a perpetual or periodic inventory system. The perpetual inventory system provides a means for generally up-to-date records related to inventory quantities. Under this system, data are available at any time relative to the quantity of material or type of merchandise on hand. In a perpetual inventory system, purchases and sales of goods are recorded directly in the inventory account as they occur. A cost of goods sold account is used to accumulate the issuances from inventory. The balance in the inventory account at the end of the year should represent the ending inventory account.

When the inventory is accounted for on a periodic inventory system the acquisition of inventory is debited to a purchases account. Cost of goods sold must be calculated when a periodic inventory system is in use. Ending inventory is determined by a physical count at year-end.

Inventory cost flow assumptions include average cost, specific identification, first in, first-out (FIFO), last-in, first out (LIFO). It should be

remembered that these assumptions relate to the flow of costs and not the physical flow of inventory items into and out of the company.

The primary objectives of financial reporting of inventories are to provide (a) information useful in investment and credit decisions, (b) information that is useful in assessing cash flow prospects, and (c) information about enterprise resources, claims to these resources, and changes in them. The inventory valuation method that leads to the accomplishment of these objectives should be the one selected. The variety of inventory methods that exist have been devised to assist in accurate computation of net income rather than to permit manipulation of reported net income. Thus, it is suggested that once an inventory method is selected, it should be applied consistently there after. However, if a change should subsequently be made, it should be clearly explained and the effects disclosed in the financial statements.

1.9 ANSWERS TO CHECK YOUR PROGRESS

1.

- i. Inventories are assets consisting of goods owned by the business and held for future sale or for use in the manufacture of goods for sale.
- ii. In the periodic inventory system, only the revenue from sales is recorded at the time a sale is made. No entry is made until the end of the period to record the cost of goods sold. In the perpetual inventory system, sales and cost of merchandise sold are recorded at the time each sale is made. In this way, the accounting records continuously disclose the amount of inventory on hand.

2.

- (i) All inventoriable goods owned by the company on the inventory date should be included in inventory, regardless of their location. The shipping terms are indications as to when title passes from the seller to the buyer. In case of FOB shipping point, ownership title passes

from the seller to the buyer at the point of shipment. Therefore in item (a) the goods should be included in the ending inventories. In case of FOB destination, ownership title passes from the seller to the buyer when the item is delivered to the buyer. Therefore in item (b) the goods should not be included in the ending inventories of the buyer.

(ii) Since the ownership title has not passed to Dollar Company, there goods should not be included in Dollar Company's ending inventories.

3.

(i) The Money-value LIFO method can be applied under

- double-extension
- link-chain
- index
- retail

(ii) - A permits income manipulation.

- difficult to apply for a complex enterprise.

4. Market refers to current replacement cost

5. The objectives of reporting inventories in the balance sheet are to reveal the type, the relative liquidity, the basis of valuation, the cost, and in some case the market value of the inventories. The inventory value should be determined in the same manner in which it was determined in prior years, or, if a change has become necessary, the nature, justification, and effect of the change should be disclosed.

1.10 MODEL EXAMINATION QUESTION

I. True or False

_____ 1. A physical inventory should be taken at least annually even when a perpetual inventory system is used.

- _____ 2. When goods are shipped F.O.B. shipping point, title passes only when the seller receives full payment for the merchandise.
- _____ 3. An understatement of the Ending Inventory will cause cost of goods sold to be understated and net income to be overstated for that period.
- _____ 4. The ending inventory under a FIFO periodic inventory system will be the same as under a FIFO perpetual Inventory system.
- _____ 5. Under Money-value LIFO, there will never be a layer for a particular year unless the quantity of inventory increased during that year.

II. Multiple Choices

- _____ 1. Valuation of inventories requires the determination of all of the following except.
 - A. The costs to be included in inventory
 - B. The physical goods to be included in inventory
 - C. The cost of goods held on consignment from other companies.
 - D. The cost flow assumption to be adopted.
- _____ 2. The ending inventory of the Narramore Company is understated in year one by Br. 20, 000. This error is not corrected in year one or in year two. What impact will this error have on total net income for years one and two combined?
 - A. No effect on total net income for the two years
 - B. Overstate total income by Br. 20, 000
 - C. Understate total income by Br. 20, 000
 - D. Overstate net income for year one by Br. 20, 000 and year two by Br. 20, 000 for a total overstatement of Br. 40, 000

_____ 3. Which of the following inventory methods comes closest to stating ending inventory at replacement cost?

- A. FIFO
- B. LIFO
- C. Weighted-average
- D. Base Stock

_____ 4. The use of LIFO under a perpetual inventory system (units and costs):

- A. May yield a higher inventory valuation than LIFO under a periodic inventory system when prices are steadily falling.
- B. May yield a higher inventory valuation than LIFO under a periodic inventory system when prices are steadily rising.
- C. Always yields the same inventory valuation as LIFO under a periodic inventory system.
- D. Can never yield the same inventory valuation as LIFO under a periodic inventory system.

_____ 5. The purchase of inventory items on account using the perpetual inventory method:

- A. Decrease working capital and the current ratio
- B. Has no effect on working capital but decrease the current ratio
- C. Has no effect on the current ratio but decreases working capital
- D. Has no effect on working capital or the current ratio

_____ 6. In periods of rising prices, use of LIFO rather than the FIFO inventory method will most likely have what effect on the following items?

	<u>Net Income</u>	<u>Cost of Goods Sold</u>	<u>Working</u>
	<u>Capital</u>		
A.	Higher	Lower	Lower

B.	Lower	Higher	Lower
C.	Higher	Higher	Higher
D.	Lower	Higher	Higher

III. Exercise

1. Stationers Company had 200 calculators on hand on January 1, year 9, and costing Br. 18 each. Purchases and sales of calculators during the month of January, year 9, were as follows:

<u>Date</u>	<u>Purchases</u>	<u>Sales</u>
Jan. 12.....		150@Br. 28
14.....	100@Br. 20	
29.....	100@Br. 22	
30.....		100@Br. 32

A stationer does not maintain perpetual inventory records. According to physical count, 150 calculators were on hand on Jan. 31, year 9.

Compute the cost of stationers company's Jan. 31, year 9, inventory of calculators under (a) the FIFO method, and (b) the LIFO method A inventory valuation.

2. Dexter Company sells water bees. The perpetual inventory balance was Br. 19, 600 in the accounting records on December 32, year 4. Some events that occurred near the end A year 4 are listed below:
 - (1) Beds shipped to a customer on January 2, year 5, costing Br. 2, 000, were included in inventory on December 31, year 4. The sale was recorded in tear 5.
 - (2) Beds costing Br. 9, 000 received on Dec. 30, year 4, were recorded as having been received on January 2, year 5.
 - (3) Be4ds received costing Br. 1, 900 were entered twice in the perpetual inventory record.

- (4) Beds shipped "FOB shipping point" on Dec. 28, year 4, which cost Br. 8, 000 were not recorded as a sale by Dexter unit January 3, year 5. The beds were included in the ending inventory.
- (5) Beds on hand that cost Br. 2, 300 were not entered in the accounting records in year 4.

Prepare a working paper showing the correct amount of Dexter Company's inventory on Dec. 31, year 4.

3. Longo Company was established April 1, year 1, and adopted the Money-value LIFO method, double-extension technique, for valuing inventories, which consisted at a single pool having two products, ergo and farad. Quantities and unit costs of the two products on march 31, year 2, year 3, and year 4, were as follows:

Item	<u>Quantities march 31</u>			<u>Unit Costs, march 31,*</u>		
	year 2	year 3	year 4	year 2	Year 3	
	year 4					
Engo	10, 000	12, 000	16, 000	Br. 6.00	Br. 6.20	Br.
						6.381/4
Parad	20, 000	24, 000	30, 000	2.00	2.40	
						2.42

* March 31, year 2, unit cost is LIFO cost; unit costs on March 31, year 3 and year 4 are current costs.

Compute the cost indexes for Longo Company on March 31, year 3 and year 4, by the double-extension technique under the dollar -value LIFO method. (The year ended March 31, year 2, is the base year.)

4. The following information relates to commodity of willing company for the month of January:

Inventory, Jan. 1.....100 units@Br. 5

Purchases.....400units@Br.6; 100 unit@Br. 7

Inventory, Jan. 31..... 200 units

- Compute the balance of willing company's January 31, inventory under the First-in, First out cost flow assumption.
 - Compute willing Company's cost of goods sold for January under the last-in-First-out cost flow assumption
5. You are given the following data about four items included in the inventories of corporation:

	ITEM			
	W	X	Y	Z
Cost.....	Br. 50	Br.	Br.	Br.
Replacement	52	62	29	46
Cost.....	53	48	25	44
Sales price less selling & completion costs...	47	59	23	42
Sales price less selling & completion costs and less normal gross profit.....		51	20	38

- Indicate which amount is to be used in valuing word corporation's ending inventories in accordance with the lower-of-cost-or-market role.

1.11 GLOSSARY

- Ceiling: Estimated selling price of inventory reduced by the estimated cost of completion and sale.
- Cost flow: the inflow of costs when goods are purchased or manufactured and to the outflow of costs when goods are sold.

3. First-in-first-out (FIFO) method: a method of inventory costing based on the assumption that the costs of merchandise sold should be charged against revenue in the order in which costs were incurred.
4. Floor: the ceiling reduced by the normal gross profit.
5. Inventory profit: the difference between the original cost of goods sold and their current cost at the time of sale.
6. Last-in, first-out (LIFO) method: a method of inventory costing based on the assumption that the most recent merchandise costs incurred should be charged against revenue.
7. LIFO liquidation:
8. Lower-of-cost-or-market (LCM) method: a method of costing inventory at the lower market

UNIT 2: INVENTORIES: SPECIAL VALUATION METHODS

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2.0 AIMS AND OBJECTIVES

The aim of this unit is to discuss the development and use of various estimation techniques used to value ending inventory without a physical count. In addition, this chapter aims at discussing accounting for construction-type contracts.

After you have studied this unit, you will:

- understand under what conditions the gross profit method of estimating inventories is used and how it is applied;
- be able to use the retail inventory method to value inventory;
- be familiar with several special inventory valuation methods;
- understand accounting for construction-type contracts.

2.1 INTRODUCTION

In the previous unit, different methods for computing the unit cost for inventories were explained by examining the various flow assumptions used in accounting. Other possibilities will be explored in this chapter. For example, what happens if there is a fire and a physical count cannot be made? How does the accountant determine the ending inventory for insurance purposes? Or, what happens in large department stores where monthly inventory figures are needed, but monthly physical counts are not feasible.

These techniques involve the development and use of estimation techniques to value the ending inventory without a physical count.

2.2 GROSS PROFIT METHOD

The gross profit method is useful for several purposes:

1. to control and verify the validity of inventory cost
2. to estimate interim inventory valuations between physical counts.
3. to estimate the inventory cost when necessary information normally used in cost is unavailable.

When both merchandise and inventory records are destroyed by fire, the inventory cost may be estimated by the use of the gross profit method as follows. The gross profit and costs of goods sold percentage are obtained from prior years' financial statements, which presumably are available. The beginning inventory amount for the current year is the ending inventory amount of the preceding year. Net purchases are estimated from copies of the paid checks returned by the bank and through correspondence with suppliers. Sales are computed by reference to cash deposits and by an estimate of the outstanding accounts receivable through correspondence with customers.

Estimating the ending inventory by the gross profit method requires three steps:

1. Estimate the gross profit rate on the basis of prior years' sales: $(\text{Sales} \div \text{cost of goods sold}) \div \text{sales} = \text{gross profit rate}$.
2. Compute the cost of goods sold ratio: $1 - \text{gross profit rate} = \text{cost of goods sold ratio}$.
3. Solve the following equation for ending inventory using this period's data.

$$\text{Beginning inventory} + \text{Net purchases} = \text{Ending inventory} + \text{Net sales} \times \text{Cost of goods sold ratio}$$

Beginning inventories, at cost -----	Br. 40,000
Net purchases -----	200,000
Net sales -----	225,000
Gross profit rate for past three years -----	20%

Beginning inventories, at cost -----	Br. 40,000
Add: Net purchases -----	200,000
Cost of goods available for sale -----	Br. 240,000
Less: Estimated cost of goods sold:	
Net Sales x Cost of goods sold ratio -----	180,000
(Br. 225,000 x 0.80) -----	

The cost of ending inventories estimated by the gross profit method is reasonably consistent with the usual method of valuing inventories. This follows from the fact that the gross profit percentage is based on historical records that reflects the particular method of valuing the inventories. If the inventories are valued at LIFO, the estimated inventories will approximate LIFO cost; therefore, if the gross profit method is used as a basis for recovering an insured fire loss, the inventories should be restated for insurance purpose to current fair value at the time of the fire.

Sometimes the gross profit percentage is stated as a percentage of cost. In such situations the gross profit percentage must be restated as a percentage of net sales to compute the cost percentage (based on net sales)

for the period. For example, if the gross profit is stated as 30% of cost, the gross profit percentage may be restated to 23% of net sales as follows:

(1) $30\% = 3/10$ gross profit based on cost

(2) Add numerator of fraction to denominator to make $3/13$

(3) $3/13 =$ gross profit based on sales.

The gross profit method has two significant limitations:

1. The past gross profit rate may not approximately reflecting mark up changes relating to the current or future periods.
2. Gross profit rates (mark up rates) may vary widely on different types of inventory. A change during the period in the mark up rate on one or more lines or a shift in the relative quantities of each line sold (shifts in the sales mix) changes the average gross profit rate. This change affects the reliability of the results.

When the gross profit method is applied in a situation that involves broad aggregations of inventory items with significantly different markup rates, the computations should be developed for each separate class. The estimate of the total inventory is then determined by summing the estimates for the separate classes.

The gross profit method frequently is used in the preparation of interim reports. It should be clear that the use of the gross profit results in an estimated cost of inventories. If the reporting enterprise normally values inventories at LCM for annual reporting purposes, it must follow the same procedure for interim reporting purposes. Thus, the estimated cost obtained by use of the gross profit method must be compared with current replacement costs to determine whether a write-down to a lower "market" is required. The gross profit method may be used for interim reports even though annual inventories are determined by the use of one of the cost flow assumption (LIFO, FIFO etc)

Enterprises that use the gross profit method for interim reports adjustment that result from reconciliation with the annual physical inventory.

Check your progress- 1

- i. List three uses that may be made of the gross profit method of estimating inventories.

_____.

- ii. Convert the following gross profit percentage based on net sales to gross profit percentages based on cost: 162/3 %, 25% and 50%.

_____.

- iii. Convert the following gross profit percentage based on cost to gross profit percentage based on net sales: 25%, 50% and 150%.

_____.

2.3 RETAIL INVENTORY METHOD

The retail inventory method often is used by retail stores, especially department stores that sell a wide variety of items. In such situations, perpetual inventory procedures may be impractical, and a complete physical inventory count is usually taken only annually. The retail inventory method is appropriate when items sold within a department have essentially the same markup rate and articles purchased for resales are priced immediately.

The retail inventory method required that a record be kept of (1) the total cost and retail value of goods purchased (2) the total cost and retail value of goods available for sale, and (3) the sales for the period. The sales for the period are deducted from the retail value of goods available for sale to produce as estimated inventory at retail. The ratio of cost to a retail for all goods passing through a department or firm is then determined by dividing

the total goods available at retail. The inventory valued at retail is converted to approximate cost by applying the cost to retail ratio.

Some uses of retail inventory method of estimating the cost of inventories are:

1. To verify the reasonableness of the cost of inventories at the end of the accounting period. By using a different set of data from that used in pricing inventories accountants may establish that the valuation of inventories is reasonable.
2. To estimate the cost of inventories for interim accounting periods and for income tax purposes
3. To permit the valuation of inventories when selling prices are the only available data. The use of this method allows management to mark only the selling prices on the merchandise and eliminates the need for reference to specific purchase invoices.

To illustrate the retail method of estimating inventories (at average cost), assume the following simple data for Ethio Company:

Cost Retail

Beginning inventories.....	Br. 40, 000	Br.
50, 000		
Net Purchases.....	<u>150, 000</u>	<u>200,</u>
<u>000</u>		
Goods available for sale.....	Br. 190, 000	Br.
250, 000		



Cost percentage (Br. 190, 000	Br. 250, 000)....	70%
Less: Sales and normal shrinkage.....		<u>220,</u>
<u>000</u>		

Ending	Inventories,	at	retail
Br. 30, 000			
Estimated ending inventory, at cost			
(Br. 30, 000 x 0.7)		Br. <u>22, 000</u>	

Although the retail method enables estimation of the value of inventories without a physical count of the items on hand, the accountant should insist that a physical inventory be taken periodically. Otherwise, shrinkage due to shoplifting, breakage, and other causes might so undetected and might result in an increasingly overstated inventories valuation.

Normal shrinkage in the inventories may be estimated on the basis of the goods that were available for sale. The method frequently used is to develop a percentage from the experience of past years, such as 2% of the retail value of goods available for sale. This percentage is used to determine the estimated shrinkage, which is deducted, together with sales, from goods available for sale at retail prices to compute the estimated inventories at retail prices. When sales are made to employees or selected customers at a special discount price, such discounts are added to sales to compute the estimated inventories at retail prices. The cost of normal shrinkage is included in the cost of goods sold; the cost of abnormal shrinkage (theft, unusual spoilage etc) that is material in amount is reported separately in the income statement.

The retail method differs from the gross profit method in that it uses a computed cost ratio based on the actual relationship between cost and retail for the current period, rather than the historical ratio. The computed cost ratio is an average across several different kinds of goods sold. Although the computed inventory amount is an estimate, it is acceptable for external financial reporting.

The data used above for Ethio Company assumed no changes in the sales price of the merchandise as originally set. Frequently, however, the original

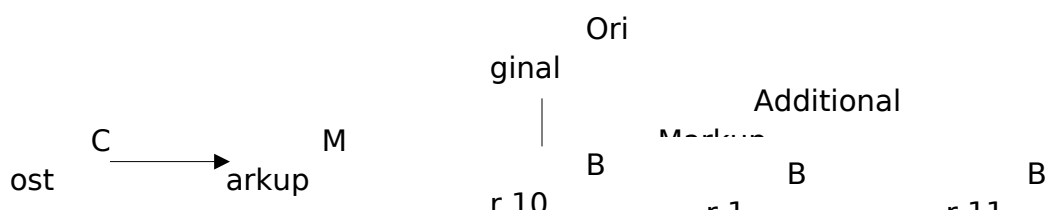
sales price on merchandise is changed, particularly at the end of the selling season or when replacement costs are changing. The retail method requires that a careful record be kept of all changes to the original sales price because these changes affect the inventory cost computation. To apply the retail inventory method, it is important to distinguish among the following terms:

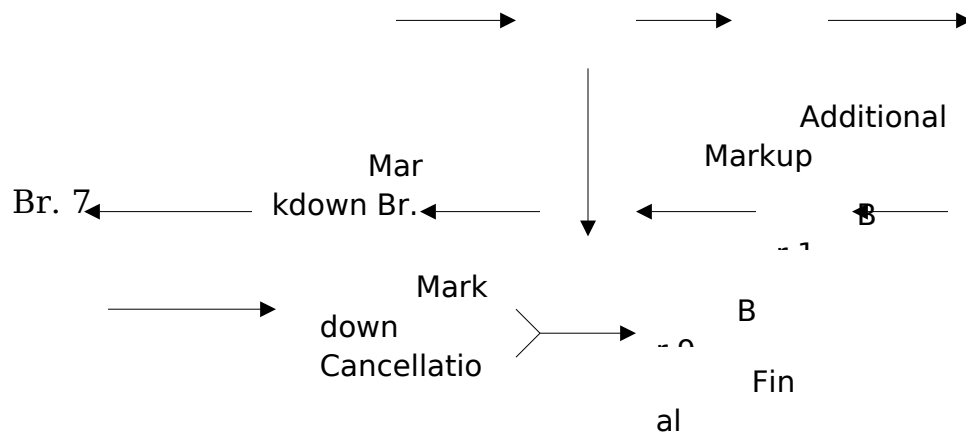
- Original selling price - the price at which goods originally are offered for sale.
- Markup - the original or initial margin between the selling price and cost. It also is referred to as gross margin or mark-on.
- Additional markup - an increase in the sales price above the original sales price.

The original sales price is the base from which additional markup is measured.

- (Additional) markup cancellation - cancellation of all or some, of an additional markup. The reduction does not reduce the selling price below the original selling price. Additional markup less markup cancellations is usually called net markups or additional net markups.
- Markdown - a reduction in selling price below the original sales price.
- Markdown cancellation - an increase in the sales price (that does not exceed the original sales price) after a reduction in the original markdown less markdown cancellations are referred to as net markdowns.

The definitions are illustrated below. An item that cost Br. 8 is originally marked to sell at Br. 10. This item is subsequently marked up Br. 1 to sell at Br. 11, then marked back down to Br. 7, but Br. 2 of the markdown was canceled, yielding a final sales price of Br. 9





The retail inventory method can be applied in different ways to estimate the cost of ending inventory under alternative inventory cost flow assumptions.

The data below will be used to illustrate the application of retail method with different cost flow assumptions.

December 31, 1990:	<u>At cost</u>	<u>At retail</u>
Inventory at beginning of period		Br. 31,620
Br. 54,000		
Net purchases during period		150,380
220,000		
	Additional markups during period	
10,000		
	(Additional) markup cancellation during period	
4,000		
	Markdowns during period	
21,750		
	Markdown cancellation during period	
1,750		
	Sales revenue for the period	
180,000		

2.3.1 Retail Method - Valuation at Average Cost

The average cost basis ratio is computed on total goods available for sale (i.e. the sum of beginning inventory plus purchases) because the cost of the ending inventory is assumed to represent the total goods available for sale during the period. Thus, this cost ratio reflects the relationship of cost to retail values for all inventory items available for sale, including the beginning inventory.

Average cost ratio =

$$= \frac{\text{Br. } 21,600 + \text{Br. } 150,300}{\text{Br. } 24,000 + 220,000 + \text{Br. } 90,000 + \text{Br. } 1,750 + 21,750} = \frac{182,000}{260,000} \times 100\% = 70\%$$

$$\begin{aligned} \text{Ending inventory at retail} &= \text{Br. } 260,000 - \text{Br. } 180,000 \\ &= \text{Br. } 80,000 \end{aligned}$$

$$\begin{aligned} \text{Estimated ending inventories at average cost} &= \text{Br. } 80,000 \times 0.7 \\ &= \text{Br. } \underline{56,000} \end{aligned}$$

The estimated cost of ending inventories is accurate only if the goods on hand consist of a representative sample of all goods available for sale during 1990. For example, if the ending inventories do not include any goods that were on hand on January 1, 1990, the cost percentage should be computed with out use of the beginning inventories amount. Similarly, if all goods on which the net markups and markdowns should be excluded from the computation of the cost percentage. Under such circumstances,

however, the net markups and net markdowns still are used to compute the ending inventories at retail prices

Check your progress - 2

- i. For what purpose may the retail method of inventory valuation be used?

_____.

- ii. Describe the computation of the cost percentage when inventories are valued at estimated average cost by the retail method.

_____.

2.3.2 Retail Method- Valuation at Lower of Average Cost or Market

The retail method may be adopted to produce inventory valuations approximately the lower of average cost or market when there have been changes in the costs and selling prices of goods during the accounting period. The inclusion of net markups and the exclusion of net markdowns in the computation of the cost percentage produces an inventory valued at the lower of average cost or market. This is sometimes called the conventional retail method.

$$\text{Cost ratio} = \frac{\text{Cost of Beginning Inventory} + \text{Net markups}}{\text{Retail price of Beginning Inventory} + \text{Net markups} - \text{net markdowns}}$$

$$= \frac{182,000}{280,000} = 65\%$$

The inclusion of the net markups in the computation of the cost percentage assumes that the net markups apply proportionately to items sold and to items on hand at the end of the accounting period; however, net markdowns are assumed to apply only to the goods sold. Because the retail price of goods to which the markdowns apply is less than the original retail price, the net markdowns as well as sales must be deducted from goods available for sale at retail price to determine the inventories at retail price of these assumptions are correct, the exclusion of net markdowns in the computation of the cost percentage values the ending inventories at actual average cost. However, if the net markdowns apply both to goods sold and to goods on hand, the exclusion of net markdowns from the computation of the cost percentage results in an inventory valuation at the lower of average cost or market.

Ending inventories, at retail = Br. 80,000 (does not change)

Estimated ending inventories at lower of average cost of market = Br.
80,000 x 0.65

= Br.

52,000

2.3.3 Retail Method - Valuation at Last-in, First-Out

If the LIFO method is used to estimate the cost of inventories, the conventional retail method must be modified. The retail method may be adapted to approximate LIFO cost of the ending inventories by the computation of a cost percentage for purchases of the current accounting period only. The objective is to estimate the cost of any increase (LIFO layer) in inventories during the accounting period.

Because LIFO is a cost method of inventory valuation, both net markups and net markdowns are included in the computation of cost percentage for purchase of the current period.

For purposes of this illustration, assume that selling prices have remained unchanged and the net markups and net markdowns apply only to the goods purchased during 1990.

Net purchases, at cost = Br. 150,380

Net purchases, at retail = Br. 220,000 + Br. 10,000 - Br. 4,000
 = Br. 21,000 + Br. 1,750
 = Br. 206,000

Cost percentage = $\frac{\text{Br. } 150,380}{\text{Br. } 206,000} = 73\%$

Inventory increase during the period, at retail = Br. 80,000 - Br. 54,000
 = Br. 26,000

Layer added during the period to beginning inventory = Br. 26,000 x 0.73
 = Br. 18,980

Beginning inventory, at cost = Br. 31,620

Estimated ending inventories

at LIFO cost = Br. 50,600

N.B Beginning inventories are excluded from computation of cost percentage when retail LIFO method is used.

2.3.4 Retail Method - Valuation at First-in, First-out

The cost of ending inventories on a FIFO basis may be estimated from the given data as

Ending inventory, at retail = Br. 80,000

Cost percentage (for current net purchases) = 73%

Estimated ending inventories, at FIFO = Br. 58,400 (Br. 80,000 x 0.73)

N.B. The beginning inventories are excluded from computation of cost percentage when retail FIFO method is used.

2.3.5 Changes in price levels and the retail LIFO method

Let us now remove the simplifying assumption of the stability of selling prices. In reality, retail prices do change from one accounting period to another, and this is particularly significant for pricing inventories at retail LIFO. Because the procedure employed under these circumstances is similar to that used in conjunction with money-value LIFO, it is known as the money-value retail LIFO method. The ending inventories at retail prices must be converted to beginning-of-year prices to ascertain the increase in the inventories at beginning-of-year prices. An appropriate cost index must be used to convert from end-of-year prices to beginning-of-year prices.

The procedure for estimating the cost of the ending inventories under the money-value retail LIFO method and assuming increasing selling prices, is shown below for DOT Company. The sales price index at the beginning of 1990, when LIFO was adopted, is assumed to be 100, and the index at the end of 1990 is assumed to be 110, an increase of 10%. When the base-price index is other than 100, the percentage increase is determined by dividing the index at the end of the current period by the base-period index and subtracting 100. For example, if the base-period index is 125 and the index at the end of the current period is 150, the increase would be 20% [(150



$$125) - 100 = 0.2]$$

DOT Company
Money-value Retail LIFO method
December 31, 1990

	<u>Cost</u>	<u>Retail</u>
Inventories, Jan.1, 1990 (date of LIFO was adopted).....	Br. 18, 000	
Br. 30, 000		
Purchases during 1990 (Cost percentage is 65%)		65, 000
<u>100, 000</u>		
Goods available for sale during 1990, at retail prices		
Br. 130, 000		
Less: Net sales during the period		<u>75, 000</u>
Inventories, Dec 31, 1990, at retail prices		
Br. 55, 000		
Computation of increase in inventories, at end-of-year		
Retail prices:		
Inventories, Dec. 31, 1990, at beginning-of-year		
Retail prices (Br. 55, 000	1.10)	
Br. 50, 000		
Less: Inventories, Jan. 1, 1990, at retail prices		<u>30, 000</u>
Increase in inventories, at end-of-year retail prices		Br.
<u>20, 000</u>		
Increase in inventories, at end-of-year retail prices		

(Br. 20, 000 x 1.10)	Br. <u>20,000</u>
Ending inventories, at money-value retail LIFO cost:	
Beginning inventories layer	Br. 18, 000
Add: Layer added in 1990 (Br. 22, 000 x 0.65).....	<u>14, 300</u>
Estimated ending inventories, at money-value	
Retail LIFO cost	Br. <u>32, 300</u>

Check Your Progress -3

- i. Describe the procedure required to estimate inventories on the retail LIFO basis after retail prices have increased.

_____.

Special items related to the retail method: Several items may complicate computation of the ending inventory value using the retail inventory method. In overcoming such complications, it is essential to protect the integrity of the computed cost ratio and the estimated ending inventory at retail. The treatment of the six complicating items is discussed as follows:

1. Freight-in: An expenditure for freight adds to the cost of merchandise; therefore, it is added to goods available for sale (or directly to purchase) at cost (but not at retail) markups will automatically provide for freight-in expenditures.
2. Purchase returns: Because purchase returns, as distinguished from allowances, reduce the amount of goods available for sale at both cost and retail. A purchase allowance is deducted only in the "At cost" column, any associated sales price reduction would be reflected in markdowns
3. Abnormal casualty losses: merchandise missing because of unusual or infrequent events (such as fire or theft) are deducted from goods available for sale at both cost and retail because they will not be sold;

removal from both cost and retail eliminates their effect on the cost ratio as if they had not been purchased in the first place. Damaged merchandise is not up in a special inventory account at its net realizable value.

4. Sales returns and allowances: Because this is a contra account to the sales revenue account, sales returns and allowances are deducted from gross sales. Returns and allowances are deducted from gross sales. If the returned merchandise is placed back into inventory for resale no change in the "At Cost" column. Merchandise not returned to inventory (because of damage, for example), is deducted, at retail, from gross sales. The original cost of merchandise is deducted from ending inventory at cost, after applying the cost ratio to ending inventory at retail. The merchandise is set up in a special inventory account at its net realizable value.
5. Discounts to employees and favored customers: Discounts that result from selling merchandise below the normal sales price and that are not caused by market value decreases are different from markdown. Such discounts are deducted after calculation of the cost ratio, which means they reduce ending inventory at retail but not the total cost of goods available for sale.
6. Normal spoilage: This is the relative value of the units lost under normal conditions including expected shrinkage and breakage. This amount is also deducted below the cost ratio at retail, because the expected cost of normal spoilage is included implicitly in determining the selling price and does not reflect market value charges. Normal spoilage, then, is not included in the cost-to-retail ratio calculation but is deducted in determining ending inventory at retail because it represents goods not available for sale at the end of the period. Abnormal spoilage and theft are another matter. They are not deducted from the total cost of goods available for sale but are deducted, instead, in establishing the cost ratio.

2.4 OTHER VALUATION METHODS

Different issues affect inventory valuations. Two of these are current replacement cost and selling prices.

2.4.1 Valuation of inventories at replacement cost

Special inventory categories often include items for resale that are damaged, shopworn, obsolete, defective, trade-ins, or repossessions. These inventory items are assigned a cost related to their condition, namely, their current replacement cost, if it can be determined reliably in an established market for the items in their current condition.

Current replacement cost is defined as the price for which the items can be purchased in their present condition. The replacement-cost valuation of inventories in the preparation of financial statements is not generally accepted.

If replacement costs were adopted for inventory valuation, holding gains and losses represented by the difference between actual costs and replacement costs would be recognized and included in income prior to the sale of finished products.

2.4.2 Valuation of Inventories at net selling prices

Valuation of inventories at net selling prices (Sales prices less direct costs of completion and disposal) has some appeal, especially when one considers that economic value is added as the goods are brought to market. For example, in a retail stores goods are more valuable than they were at the wholesaler's warehouse; value is added by the process of bringing the goods nearer the ultimate market.

The valuation of inventories at net selling prices is appropriate for some types of business enterprises producing commodities that have readily

determinable market prices. When the production of such commodities is complete, revenue may be considered realized. In some enterprises having selling prices established by contract, the sale is reasonably assured, and completed inventories may be valued at net selling prices.

Check Your Progress -4

- (i) Under what conditions may inventories be valued at net selling prices? Explain.

2.5 ACCOUNTING FOR CONSTRUCTION-TYPE CONTRACTS

Contracts for construction of buildings, roads, bridges, dams and similar projects often require more than one year to complete. Because of their unique features, such contracts present special problems of asset valuation and revenue recognition.

The four basic types of construction contracts are:

1. Fixed-price (or lump-sum) contracts, which provide for a single price for all work performed by the contractor.
2. Unit-price contracts, which include a fixed price for each unit of output under the contract.
3. Cost-type contracts, which provide for reimbursement of specified costs incurred by the contractor plus fee for the contractor's services.
4. Time-and-material contracts, which provide for a fixed hourly rate for the contractor's direct labor hours, plus payment for the cost of material and other specified items.

Methods of accounting for construction type contracts: As stated in chapter 5 of financial accounting -I, the two methods of accounting for

construction-type contracts are the percentage of completion method and the completed-contract method.

Most contractors employ the percentage-of-completion method of accounting for financial accounting. This method requires the accrual of gross profit and revenue over the term of the contract based on the progress achieved each year. If the work performed in a year is estimated to represent 40% of the total work required on the contract, 40% of the total estimated gross profit and revenue is considered realized. The recognition of gross profit and revenue is accomplished by increasing the carrying amount of the cost of contracts in progress ledger account, which is comparable with the goods in process inventory account of a manufacturing enterprise.

Under the completed-contract method of accounting, no gross profit is recognized for a construction project until it is substantially completed; that is when remaining costs and potential risks are insignificant in amount. The completed contract method is appropriate for financial accounting only if a contractor has primarily short-term contracts that are completed in a year or less or its estimates of input or output measures of completion are not reasonably dependent or are subject to inherent hazards.

2.5.1 Accounting for construction-type contract: Profit anticipated

To illustrate the accounting for a construction-type contract, assume that Berta Construction Company entered into a contract with a customer to construct an office complex for a fixed price of Br. 1, 200, 000, on January 1, 1992, at the beginning of its fiscal year. Data with respect to the contract for three years ended on December 31, 1994 were as follows:

Year Ended December 31
1992 1993 1994

Construction costs incurred.....	Br. 200, 000	Br. 250, 000	Br. 400, 000
Estimated cost to complete construction at the end of year.....	600, 000	350, 000	0
Progress and other billings to the customer.....	300, 000	400, 000	500, 000
Collections from customer on billings.....	270, 000	360, 000	450, 000
Operating Expenses incurred.....	50, 000	60, 000	70, 000

Using the above data we can illustrate accounting for the construction enterprise under the two known accounting methods.

- (1) The journal entries for the Company's operations during the three years ended December 31, 1994, under the percentage-of-completion, cost-to-cost method of accounting, would be as follows:

Year ended December 31

1992 1993 1994

	Dr.	Cr.	Dr.	Cr.	Dr.	Cr.
Cost of contracts in progress.....	200, 000				250, 000	400, 000
Operating Expenses.....		50, 000			60, 000	70, 000
Material Inventory, cash, etc.....			250, 000		310, 000	
			470, 000			

To record Operating Expenses and construction costs

Contract Receivable.....	300, 000	400, 000	
Progress Billings.....	300, 000	400, 000	500, 000

To record progress billings

Cash.....	270, 000	360, 000	450, 000
Contract Receivable		270, 000	360, 000
450, 000			
To record collection from customers			
Cost of contract revenue.....	200, 000	250, 000	400, 000
Estimated earning on contract in progress.....	100, 000	125, 000	125, 000
Contract revenue.....	300, 000	375, 000	525, 000
To record contract revenue estimated on the basis of cost incurred to total estimated cost, as follows:			

$$\begin{array}{r}
 \text{Br. } 200,000 \\
 \hline
 \text{Br. } 800,000 \\
 1992: \text{ Br. } 1, 200, 000 \times \\
 = \text{ Br. } 300, 000
 \end{array}$$

$$\begin{array}{r}
 \text{Br. } 450,000 \\
 \hline
 \text{Br. } 800,000 \\
 1993: (\text{Br. } 1, 200, 000 \times - \text{ Br. } 300, 000 \\
 = \text{ Br. } 375, 000 \\
 1994: \text{ Br. } 1, 200, 000 - \text{ Br. } 675, 000 \\
 = \text{ Br. } \underline{525, 000}
 \end{array}$$

Progress Billings	1, 200, 000	
Cost of contracts in progress		850, 000
Estimated Earnings on contracts in progress		350, 000
To record approval of project by customer		

(2) The journal entries for the company's operations during the three years ended December 31, 1994 under the completed contract method, would be as follows:

Year ended December 31

1992 1993 1994

	Dr.	Cr.	Dr.	Cr.	Dr.	Cr.
Cost of contracts in progress.....		200, 000			250, 000	400, 000
Operating Expenses.....		50, 000			60, 000	70, 000
Material Inventory, cash, etc.....			250, 000		310, 000	
						470, 000

To record Operating Expenses and construction costs

Accounts Receivable.....	300, 000		400, 000		
Progress Billings.....		300, 000		400, 000	500, 000

To record billings on contracts

Cash.....	270, 000		360, 000		450, 000
Accounts Receivable			270, 000		360, 000
					450, 000

To record collection from customers

Progress Billings				1, 200, 000	
Cost of contract Revenue					850, 000

Contract Revenue					
	1, 200, 000				
Cost of contracts in progress					
	850, 000				

To record approval of project by customer

Financial statement presentation

(A) presentation in income statement

(1) Percentage-of-completion method

1992	1993	1994
------	------	------

Contract revenue.....	Br. 300, 000	Br. 375, 000	Br. 525, 000
Less: Cost of contract revenue.....	<u>200, 000</u>	<u>250, 000</u>	<u>400, 000</u>
Gross Profit	Br. 100, 000	Br. 125, 000	Br. 125, 000
Operating Expenses	<u>50, 000</u>	<u>60, 000</u>	<u>70, 000</u>
Income before income taxes	Br. <u>50, 000</u>	Br. <u>65, 000</u>	Br. <u>55, 000</u>

(2) Completed-contract method

Contract revenue	-	-	Br. 1, 200, 000
Cost of contract completed	-	-	<u>850, 000</u>
Gross Profit	-	-	Br. 350, 000
Operating Expenses	Br. <u>50, 000</u>	Br. <u>60, 000</u>	<u>70, 000</u>
Income before income taxes	Br. <u>(50, 000)</u>	Br. <u>(60, 000)</u>	Br. <u>280, 000</u>

B. Presentation in balance sheets

(1) Percentage of completion method.

	<u>End of 1992</u>	<u>End of 1993</u>	<u>End of 1994</u>
Current assets:			
Contract receivable	Br. 30, 000	Br. 70, 000	Br. 120, 000
Current liabilities			
Billings in excess of costs and			
Estimated earnings on uncompleted contract		Br. 25, 000	
<u>Computation:</u>	<u>End of 1992</u>	<u>End</u>	<u>of</u>
<u>1993</u>			

Cost incurred on uncompleted contract	Br. 200, 000	Br. 450, 000
Estimated Earnings	100, 000	225, 000
	Br. 300, 000	Br. 675, 000
Less: Billings to date	300, 000	700, 000
Billings in excess of cost and		
Estimated earning on uncompleted contract	<u>0</u>	Br. <u>25, 000</u>

(2) Completed contract Method

	<u>End of 1992</u>	<u>End of 1993</u>	<u>End of 1994</u>
Current assets:			
Contract receivable	Br. <u>30, 000</u>	Br. <u>70, 000</u>	Br. <u>120, 000</u>
Current liabilities:			
Billings in excess of costs	Br. 100, 000	Br. 250, 000	
Costs incurred on uncompleted contracts	Br. 200, 000	Br. 450, 000	
Less: Billings to date	<u>300, 000</u>	<u>700, 000</u>	
Billings in excess of costs on			
Uncompleted contract	Br. <u>(100, 000)</u>	Br. <u>(250, 000)</u>	

Note 1. The progress Billings ledger account is a contra to the cost of contracts in progress and the estimated earnings on contracts in progress ledger accounts. In essence, the balance of the progress Billings ledger account on any date prior to completion of the construction project represents the customer's equity interest in the project.

2. The cost of contracts in progress ledger account is similar to the goods in process inventory account of a manufacturing enterprise. In the cost of contracts in progress account are recorded the material, direct labor, and overhead costs incurred by the contractor, as well as costs associated with work performed by subcontractors.
3. When the cost-to-cost method is used to estimate the percentage of completion of a construction type contract, the cost of contract revenue for an accounting period is identical to the total construction costs incurred in that period. Thus, the debits to the cost of contract revenue account are the same as the debits to the cost of contracts in progress account. However, cost of goods sold of a manufacturing enterprise, appears in the income statement of the contractor and is closed at the end of each accounting period.
4. The estimated earnings on contracts in progress ledger account is a positive valuation account for the cost of contracts in progress account. The use of a separate account for the accrual of earnings on a contract under the percentage of completion method preserves the record of actual costs incurred on the contracts in the cost of contracts in progress account and still achieves the goal of increasing the carrying amount of the contracts in progress account.

2.5.2 Accounting for Construction Contracts: Loss anticipated

Under both the percentage-of-completion and the completed contract methods of accounting, an estimated loss under a construction-type contracts is recognized in full in the accounting period it becomes apparent, with a debit to provision for loss on uncompleted contract and a credit to estimated loss on uncompleted contracts. The provision (debit-balance account) is included in the income statement as an element of cost of realized contract revenue, and the estimated loss (credit balance account) is

presented in the balance sheet as a liability or as a deduction from the cost of contracts in progress.

To illustrate, assume that Dart contractors on January 2, 1990, entered into a contract to construct a building on the customer's land at a fixed price of Br. 1, 000, 000, with construction expected to be completed late in 1991. In its bids on the project, Dart estimated total constructions costs of Br. 850, 000 with an anticipated gross profit of Br. 150, 000. Construction costs incurred during 1990 totaled Br. 400, 000; estimated costs to complete on December 31, 1990, totaled Br 640, 000; and construction costs incurred during 1991 totaled Br. 650, 000; progress billings totaled Br. 300, 000 in 1990 and Br. 700, 000 in 1991. The building was completed on November 29, 1991.

Under both the percentage-of-completion method and the completed-contract method of accounting, Dart contractors would prepare the following journal entry on December 31, 199- to record the Br. 40, 000 estimated loss [(Br. 400, 000 + Br. 640, 000) - Br. 1, 000, 000 on the contract:

Provision for loss on uncompleted contract.....	40, 000
Estimated loss on uncompleted contract.....	40, 000

To provide the estimated loss on builder contract

The income statement for 1990 under the percentage-of-completion method would show contract revenue, Br. 400, 000 (the amount of the construction cost incurred in 1990); cost of contract revenue, Br. 440, 000 (Br. 400, 000 construction costs incurred plus Br. 40, 000 provision for loss). Only the Br. 40, 000 gross loss would appear in the income statement for 1991 under both the percentage-of-completion method and the completed-contract method.

For the balance sheet for Dart contractors on December 31, 1990, the Br. 400, 000 balance on the cost of contracts in progress ledger account would be reduced by the Br. 40, 000 balance of the estimated loss on uncompleted contracts account and the Br. 300, 000 balance of the progress Billings account; the net amount of Br. 60, 000 (Br. 400, 000 – Br. 40, 000 – Br. 300, 000) would appear as “costs in excess of billings on uncompleted contracts,” under both the percentage-of-completion method and the completed-contract method of accounting.

Check Your Progress -5

- (i) Differentiate between fixed-price and unit-price construction-type contracts.

2.6 SUMMARY

The gross profit method is used to estimate the amount of ending inventory. Its use is not appropriate for financial accounting purpose; however, it can serve a useful purpose when an approximation of ending inventory is needed. Such approximations are sometimes required by auditors or when inventory and inventory records are destroyed by fire or some other catastrophe. The gross profit method should never be used as a substitute for a yearly physical inventory unless the inventory has been destroyed.

The retail inventory method is an inventory estimation technique based upon an observable pattern between cost and sales price that exists in most retail concerns. This method requires that a record be kept of (a) the total cost of goods purchased, (b) the total retail value of the goods available for sale, and (c) the sales for the period.

Basically, the retail method requires the computation of the cost to retail ratio of inventory available for sale. This ratio is computed by dividing the

cost of the goods available for sale by the retail value (selling price) of goods available for sale. The resulting amount represents ending inventory priced at retail. When this amount is multiplied by the cost to retail ratio, an approximation of the cost of ending inventory results. Use of this method eliminates the need for a physical count of inventory each time an income statement is prepared. However, physical counts are made at least yearly to determine the accuracy of the records and to avoid overstatements due to theft, loss, and breakage.

When the cost to retail ratio is computed after net markups (markups less markup cancellations) have been added, the retail inventory method approximates lower of cost or market. This is known as the conventional retail inventory method. If both net markdowns are included before the cost to retail ratio is computed, the retail inventory method approximates cost.

The retail inventory method is widely used to permit the computation of net income without a physical count of inventory, as a control measure in determining inventory shortages, in regulating quantities of inventory on hand, and as a basis for information needed for insurance purpose.

2.7 ANSWERS TO CHECK YOUR PROGRESS

1. (i) Three uses of the gross profit method are
 - to control and verify the validity of inventory cost
 - to estimate interim inventory cost between physical inventories
 - to estimate the inventory cost when necessary information is lost or unavailable.
- (ii) Gross profit as a percentage of cost for the following cases when gross profit is stated as a percentage of net sales is:

$$16 \frac{2}{3} \% \text{ of net sales} = 20\% \text{ of cost}$$

25% of net sales = $33\frac{1}{2}\%$ of cost

50% of net sales = 100% of cost

(iii) Gross profit as a percentage of net sales for the following cases when gross profit is stated as a percentage of cost is:

25% of cost = 20% of net sales

50% of cost = $33\frac{1}{2}\%$ of net sales

150% of cost = 60% of net sales

2. (i) The retail method of inventory valuation may be used as follows:

1. To verify the reasonableness of physical inventories of a retail stores.
2. To estimate cost of inventories for interim accounting periods and for income tax purposes
3. To obtain an estimate of the cost of inventories when accounting records have been lost or destroyed.
4. To aid in controlling inventory quantities in department stores or in branches.

(ii) When inventories are valued at estimated average cost under the retail methods, the cost percentage is computed by dividing the cost of goods available for sale by the retail value of goods available for sale. Both net markups (additional markups less markup cancellations) and net markdowns are used in the computation of the retail value of goods available for sale.

3. If retail prices increase, the computation of the ending inventories at retail LIFO must take into account the effect of price inflation in order not to overstate the inventories. The ending inventories at retail must first be converted to base-year prices to determine the real increase in the inventories at end-of-period prices. This real increase in terms of selling prices then is reduced to cost by applying the cost percentage to the increase. The ending inventories are determined by adding the cost of the incremental layer to the cost of beginning inventories.

4. The valuation of inventories at net selling prices is appropriate for some types of business enterprises producing commodities that have readily determinable market prices. Also, in enterprises having selling prices established by contract, completed inventories may be valued at net selling prices. In both instances, realization of revenue is assumed to take place when production is completed.
5. Fixed price construction-type contracts provide for a single price for all work performed by the contractor. Unit-price contracts include a fixed price for each unit of output under the contract.

2.8 MODEL EXAMINATION QUESTIONS

Part I: True / False

- _____ 1. The allocation of a lump sum cost among the individual units on the bases of relative sales value assumes that each individual unit should show the same dollar amount of profit.
- _____ 2. The gross margin expressed as a percentage of cost is normally less than the gross margin expressed as a percentage of sales.
- _____ 3. The use of the gross profit method for interim reports does not preclude the need for a physical inventory to be taken at least annually.
- _____ 4. The conventional retail method includes net markdowns but excludes net markups in the computation of the cost of retail percentage.
- _____ 5. A major assumption of the LIFO retail method is that the markups and markdowns apply once to the goods purchased during the current period, not to the beginning inventory.

Part II. Multiple Choice

- _____ 1. Which of the following is not required when using the retail inventory method?

- A. All inventory items must be categorized according to the retail mark up percentage which reflect of the item's selling price
- B. A record of the total cost and retail value of goods purchased
- C. A record of the total cost and retail value of the goods available for sale
- D. Total sales for the period

_____ 2. Goldstein Co., specialty-clothing store, uses the retail inventory method. The following relates to 1993 operations:

Inventory, January 1, 1993, at cost	Br. 14, 200
Inventory, January 1, 1993, at sales price.....	Br. 20, 100
Purchases in 1993 at cost.....	Br. 32, 600
Purchases in 1993 at sales price.....	Br. 50, 000
Additional markups on normal sales price.....	Br. 1, 900
Sales (including Br.4, 200 of items that were marked down from Br. 6, 400).....	Br. 60,.000

The cost of the Dec. 31, 1993 inventory determined by the conventional retail method is:

- A. Br. 9, 800
- B. Br. 6, 375
- C. Br. 6, 743
- D. Br. 6, 543

_____ 3. One of the basic assumptions of the conventional retail method is that:

- A. net markups apply to the goods sold
- B. net markdowns apply to the total goods available for sale
- C. net markdowns apply ones to the goods sold
- D. the cost to retail percentage is unchanged form that of prior years.

_____ 4. Under retail inventory method, purchase returns and allowance are normally considered a reduction of price at

	<u>Cost</u>	<u>Retail</u>
A	No	No
B	No	Yes
C	Yes	No
D	Yes	Yes

_____ 5. The following pertains to an inventory item:

Cost.....Br. 60
 Estimated cost of disposal.....Br. 68
 Estimated cost of disposal.....Br. 1
 Normal gross profit margin.....Br. 11
 Replacement cost.....Br. 51

Under the lower-of-cost-or-market rule, this inventory item is valued at:

a) Br. 51 b) Br. 56 c) Br. 60 d) Br. 67 e) some other amount

III. Exercise

1. During the year ended December 31, year 7, the index of selling prices for merchandise sold by Berg Company increased from go to 108.

From the information that follows, compute Berg Company's estimated ending inventories at cost-in, First-out cost Flow assumption, taking into account the increase in selling prices.

	Cost	Selling Price	Cost Percent age
Beginning inventories (date LIFO was adopted.....)	Br. 40,00	Br. 50,000	80% 75%
Purchases.....	<u>150.</u>	<u>200.</u>	

....	<u>000</u>	<u>000</u>	
Goods available for	Br. <u>190,</u>	Br. 250,	
sale.....	<u>000</u>	000	
Less: Wet sales		<u>180,</u>	
Ending inventories		<u>000</u>	
		Br. <u>70,</u>	
		<u>000</u>	

2. Seeley Company uses the gross profit method to estimate monthly inventories. In recent months gross profit has averaged 35% of net sales. The following data are available for the month of January, year 9:

Inventories Jan. 1, year 9.....Br. 26, 590
Purchases 120, 000
Purchases returns.....5, 000
Freight-in.....6, 000
Gross sales.....169, 000
Sales returns and allowances.....10, 000

Compute the estimated cost of Seeler Company's inventories on Jan. 31, year 9 by the gross profit method.

3. On July. 10, year 10, a Fire destroyed the goods in process inventory of Tallman Company. Inventories of material and finished goods were not damaged. Physical inventories taken after the fire were as follows:

Material.....Br. 65, 000
Finished goods.....120, 000
Total.....Br. 185, 000

Inventories on Jan. 1, year 10, were as shown below:

Material.....Br. 45, 000
Goods in process.....80, 000
Finished goods.....150, 000
Total.....275, 000

The accounting records disclosed the following for Jan. 1 through July 10, year 10:

Sales (net).....	Br. 380, 000
Purchases of material (net).....	117, 500
Direct labor costs.....	92, 000
Factory overhead costs.....	58, 200

The gross profit in recent years has averaged 25% of cost of finished goods sold.

Compute the estimated cost of the goods in process inventory of Tallman Company destroyed by the fire.

4. Carson contractors, Inc., entered into a Br. 600, 000 fixed price construction-type contract on Jan. 2, year 6. Because Carson's estimates of measures of completion were subject to inherent hazards, carbon adopted the completed-contract method of accounting. Data regarding the contract for year 6 are shown below:

Construction costs incurred.....	Br. 280, 000
Estimated cost to complete construction.....	410, 000
Progress billings to customer.....	750, 000
Collections from customer on billings.....	220, 000

Prepare Journal entries for Carson contractors, Inc., for year 6 for the contract. Journal entries to close nominal ledger accounts are not required.

5. Information relating to the operations of the sportswear department of Amy's Fashion shop for the year ended December 31, year 10, is presented below:

	Cost	Retail
Beginning inventories.....	Br. 49, 600	Br. 83, 600
Purchases.....	257, 800	406, 900

Freight-in.....	10, 400	
Purchase returns.....	4, 200	7, 000
Additional markups.....		15, 000
Marking cancellations.....	8, 500	
Markdowns.....	8, 000	
Markdown cancellations.....	1, 600	
Sales.....	396, 500	
Sales returns.....	6, 700	

Normal shrinkage is estimated at 1% of the retail value of goods available for sale.

INSTRUCTIONS:

- (a) Compute the December 31, year 10, inventories of Amy's Fashion shop at the lower of average cost or market by the retail method.
- (b) Compute the December 31, year 10, inventories of Amy's Fashion shop by the retail LIFO method.

2.9 GLOSSARY

1. Gross Profit method: a method of estimating inventory on hand without the need for a physical count.
2. Net selling price: Sales prices less direct costs of completion and disposal.
3. Replacement cost: the price for which the items can be purchased in their condition.
4. Retail method: a method of inventory costing based on the relationship of the cost and retail price of merchandise.

UNIT 3: CURRENT LIABILITIES AND CONTINGENCIES

Contents

- 3.0 Aims and Objectives
- 3.1 Introduction

3.2	Current Liabilities Versus Long-term Liabilities
3.3	Valuation and Recognition of Current Liabilities
3.4	Definitely Measurable Liabilities
3.5	Liabilities Dependent on Operating Results
3.6	Contingent Liabilities
3.7	Presentation of Liabilities in the Financial Statement
3.8	Summary
3.9	Answers to Check Your Progress
3.10	Model Examination Questions
3.11	Glossary

3.0 AIMS AND OBJECTIVES

The aims of this unit are to explain the features and accounting treatments of current liabilities and contingencies.

Having studied this unit you will be able to:

- distinguish between current liabilities and long-term liabilities;
- explain how current liabilities are valued;
- distinguish between definitely measurable liabilities and liabilities dependent on operating results;
- explain circumstances at which contingencies are accrued, disclosed or, neither accrued nor disclosed;
- explain the current liabilities appearance in the financial statements.

3.1 INTRODUCTION

Liabilities, by definition, are probable future sacrifices of economic benefits arising from present obligations of a particular entity to transfer assets or provide services to other entities in the future as a result of past

transactions or events. The distinction between current liabilities and long-term liabilities is important because it enables to assess the business enterprise's ability to settle its maturing debt. In the following sub-topic of this chapter, we cover in relative detail about current liability and contingency.

3.2 CURRENT LIABILITIES VERSUS LONG-TERM LIABILITIES

- Current liabilities: are obligations for which payment will require
 - (i) the use of current assets, or
 - (ii) the creation of other current liabilities

} In one year or one operating cycle, whichever is longer
- Current liabilities include payables to suppliers and employees; accruals for taxes, rents; advance collection from customers; obligation that are payable on demand within one year even though the liquidation may not be expected within that period.
- Current liabilities do not include those obligations not settled within one operating cycle; obligations that will be liquidated by the issuance of shares of stock; the creditors lost their right to demand payment.
- The relationship between current assets and current liabilities, and the relationship between cash balance and current liabilities is important because it shows the solvency of the business (i.e. the ability to pay debts as they mature).

3.3 VALUATION AND RECOGNITION OF CURRENT LIABILITIES

- In theory, the measure of any liability at the time it is incurred is the present value of the required future cash out flow. In practice, however, most current liabilities are recorded at face amount. The difference between the present value of a current liability and the amount that will be paid at maturity usually is not material because of the short time period involved.
- The recognition of liabilities poses two conditions,

- (i) Liabilities include future cash outflow that result from past transactions and events, and
- (ii) Measured with reasonable accuracy.
- With regard to liabilities two questions always are going to be asked
 - (1) Does the liability exist?
 - (2) If it exists, what is the amount of the obligation?

In some cases of both these questions are definitely answerable. While in other instance there is uncertainty as to the amount. In extreme cases both existence and amount becomes uncertain. The remaining topics of this chapter covers in depth these three cases

3.4 DEFINITELY MEASURABLE LIABILITIES

- The amount of an obligation and its due date are known with reasonable certainty because they result from contracts or the operation of statutes. Let's give specific examples with their respective explanations.

3.4.1 Trade Accounts Payable

Trade accounts payable resulted from purchases of goods and services on account. There are two ways of recording trade accounts payable,

(1) Gross Method: -

- Here trade accounts payable are recorded at face amount. The purchases discounts ledger account is credited for discounts taken, and a material amount of discounts available to be taken at the end of an accounting period is accrued by a debit to Allowance for Purchases Discounts (a contra-liability ledger account). In the income statement (specifically in the cost of goods sold section), the purchases discount is deducted from purchases to give net purchases.

(2) Net Method: -

- In this method purchases is recorded net of discounts at the time of purchases. For discounts not taken (for one reason or another), the

Purchases Discounts Lost account is debited. In the income statement, the amount of Purchases Discounts Lost is reported under other Expenses.

Example, assume that the following information is taken from Alpha Plc. For year 6:

- (a) Purchases Br. 1, 000, 000 of merchandise on terms 2/10, n/30
- (b) Paid invoices for purchases of Br. 500, 000 with in the discount period and for purchases of Br. 200, 000 after the discount period
- (c) Estimated at the end of year 6 that 80% of Br. 300, 000 outstanding trade accounts payable would be paid with in the discount period.

Required- Give journal entries and balance sheet presentation related to trade accounts payable using gross method

Solution-

(a) Purchases	1, 000, 000
Trade Accounts payable	1, 000, 000
(b) Trade Accounts Payable (500, 000 + 200, 000)	700, 000
Purchased Discounts (500, 000 x 0.02)	10, 000
Cash	690, 000
(c) Allowance for Purchased Discounts (300, 000 x 0.08 x 0.02)	
4, 800	
Purchases Discounts	4, 800

Excerpt from balance sheet – End of year 6

Trade Accounts Payable (1, 000, 000 – 700, 000)	300, 000
Less: Allowance for purchases Discounts	<u>4, 800</u>
Carrying Amount	<u>295, 200</u>

Check Your Progress -1

1. Give journal entries and balance sheet presentation related to trade accounts payable using net method for the example given above.

3.4.2 Loan obligations (In the form of promissory notes payable)

- Promissory notes payable as evidence of borrowing is somehow stronger than the accounting for promissory notes payable in the eye of law to be enforced for collection. The accounting for promissory notes payable resembles that of accounting for promissory notes receivable. In this section we concentrate on short-term promissory notes payable (commercial paper is a good example).
- When a promissory note bears a current fair rate of interest, its face amount is equal to its present value at the time of issuance whereas when a promissory note bears no interest or an unreasonably low rate of interest, the present value of the note payable is less than its face amount. The discount of the note is converted to interest expense over the term of the note.
- For example, Assume that in November 1, year 9, unity Co. uses a one-year non interest bearing note as a consideration for the acquisition of furniture. The face amount of the note is Br. 240, 000 and the current fair rate of interest on the note is 12% compounded monthly (i.e. see the appropriate present value table for 1% (12%/12 months) per period for three decimal places).

Required (i) The journal entries for the month of November and December
(ii) The presentation of the note in unity balance sheet on Dec. 31, year 9, the end of the fiscal period

Solution (i) – Nov. 1 Furniture ($240,000 \times p12\% = 240,000 \times 0.887$) 212, 880

Discount on Notes payable	27, 120	
Notes payable		240, 000
Nov. 30 Interest Expenses $(240, 000 - 27, 120 \times 0.12 \times 1/12)$	2, 129	
Discount on Notes payable	2, 129	
Dec. 31 Interest Expense $(240, 000 - 27, 120 + 2, 129) \times 0.12 \times 1/12)$		2, 150
Discount on Notes payable	2, 150	

(ii) Excerpt from the balance sheet

Notes payable	Br. 240, 000
Discount on Notes payable $(27, 120 - 2129 - 2150)$	<u>22, 841</u>
Carrying Amount of the note	Br. <u>217, 159</u>

Note - In year 10, the note goes for additional 10 months, at the end of each month the Discount on notes payable is transferred to interest expenses.

3.4.3 Refinancing of Short -Term Debt

Refinancing means replacing short-term debt with either long-term debt or equity securities, or replacing the short-term debt with other short-term debt for more than one operating cycle from the date of the balance sheet.

Does the short-term debt expected to be refinanced on long-term basis classified as current liabilities?

- Accounting standard requires that a short term debt be classified as current liabilities unless the enterprise demonstrates both the following things:
 - (1) Intentions to refinance the debt on long-term basis, and
 - (2) Ability to carry out the refinancing
- Ability to refinance on long-term basis must be demonstrated either by

- (a) actually issuing long-term debt or equity securities to replace short-term debt, or
 - (b) entered in to a contract to replace short term debt at maturity.
- When a short term debt is not classified under current liability, the reason should have to be disclosed in the note to the financial statements. The specific disclosures required include the description of the refinancing contract, the terms of any new debt incurred, and the terms of any new equity securities issued.

3.4.4 Cash Dividends

- When board of directors declares a cash dividend, the corporation incurs a legal obligation to pay the dividend on a specified date. Because of short-duration between cash dividend declaration and payment, it is a current liability. Unless dividends in arrears on cumulative preferred stock are declared by the board, they are not liabilities but disclosed in the note to the financial statements. Undistributed stock dividends is reported in the stockholders' equity section, not as current liability because no cash outlay is required (i.e. specifically on stock dividends to be distributed ledger account).

3.4.5 Accrued Liabilities

- Accrued liabilities /accrued expenses is an obligation that come into existence as a result of past contractual commitments. To explain this topic, let's discuss accrued salary and property taxes.

ACCRUED SALARY - As you have learned in the previous accounting courses (or principles of accounting II for degree students), there are various deductions to calculate the liability for take home pay. Some of the deductions include pension contribution, income taxes withhold, contribution for labor union, penalties, etc. Here simply to give hypothetical journal entry.

Salaries Expenses

xxx

Payroll Taxes Expenses	xx	
Taxes payable		xx
Liability for income Taxes withhold		xx
Hospital insurance premium payable		x
Accrued payroll	xxx	

Note that the calculation of various taxes differ from country to country according to their legislation. The accrued payroll shows the take home pay which is accumulated and going to be paid in relatively short-period of time.

PROPERTY TAXES - are sources of revenue for the government. There are two accounting issues which arise relating to property taxes:

(1) When should the liability for property taxes be recorded?

The answer to this question can be seen from two different perspectives. On the one hand, because the legal liability for property taxes arises on the lien date, the liability may be recorded on that date. On the other hand, the AICPA took the position that accrual of property taxes during the fiscal year of the taxing units instead of recognizing the whole liability on the lien date. The latter approach is advocated in this text.

(2) To which accounting period does the tax expense relate?

Because property taxes are expenses associated with the use of property during the fiscal year of the taxing units, it seems reasonable to expense the property taxes during that period (instead of expensing it all on the lien date)

Fore example, assume that DH GEDA's plan assets are subject to property taxes by Region 14 taxing units. The fiscal year of Region 14 taxing units cover the period from April 1 to March 31. The property tax Br. 108, 000 are assessed on January 10, year 5, covering the fiscal year starting on April

1, year 5. The lien date is April 1, year 5, and taxes are payable in two installments of Br. 54, 000 each on July 15, year 5, and on November 15, year 5. Assuming DH GEDA accrues property taxes on monthly basis, the following journal entries are passed using AICPA recommendations.

* April 1 - lien date (i.e. the date at which liability comes in to existence)

No journal entry required

* At the end of April, May, June, year 5, 000/2) 9, 000

Property Taxes Expenses (108,

recording of monthly property taxes expense 9, 000

property Taxes payable

* July 15, year 5, payment of the first installment 27, 000

Property Taxes payable (3 x 9, 000)

of tax bills 000

prepaid property taxes (3. 9, 000) 27,

000

Cash 54,

Check Your Progress -2

1. Pass the journal entries for the remaining 9 months. You can form groupings if you like.

_____.

3.5 LIABILITIES DEPENDENT ON OPERATING RESULTS

Certain obligations are computed, by their nature, based on operating results. At the end of the year the operating results are known, therefore, there is no problem of determining such liabilities. The problem arises in determining such obligation for interim reporting purposes. Obligations dependent on operating results include bonuses, income taxes, royalties, etc.

INCOME TAXES

Business enterprises based on the number of owners, are classified into single proprietorship, partnerships and corporations. The first two, namely

- The journal entries if the tax is paid in advance,

Cash	xxx
------	-----

Prepaid income taxes	xxx
----------------------	-----

Income Taxes payable xxx

Cash xxx

When a bonus plan is based on income, there is a difficulty of determining which expenses are going to be deducted. There could be three different assumptions, applying the bonus percentage on:

- (1) Income before income taxes and bonus
- (2) Income after bonus but before income taxes
- (3) Net income (i.e. income after bonus and income taxes)

For example, assume that Gift Trading has a bonus plan under which marketing staff receives 25% of the income over Br. 35, 000 earned by the business. Income for the business amounted to Br. 95, 000 before the bonus and income taxes. The income tax rate is assumed to be 35%. Calculate the bonus expenses for Gift Trading under each of the following assumptions.

Assumption 1 - Bonus is calculated based on income before income taxes and bonus

$$\text{Bonus} = 0.25 (95, 000 - 35, 000) = \text{Br. } 15, 000$$

Assumption 2 - Bonus is calculated based on income after bonus but before income taxes Let B refers to bonus

$$\text{Bonus} = 0.25 (95, 000 - 35, 000 - B)$$

$$B = 15, 000 - 0.25 B \Rightarrow B = \text{Br. } 12, 000$$

Assumption 3 - Bonus is calculated based on income after bonus and income taxes

Let B refers to bonus

T refers to income taxes

$$B = 0.25 (95, 000 - 35, 000 - B - T) \Rightarrow B = 15, 000 - 0.25B - 0.25T \dots$$

(1)

$$T = 0.35 (95, 000 - B) \Rightarrow T = 33, 250 - 0.35 B \dots \dots \dots (2)$$

Substituting (2) in (1),

$$B = 15, 000 - 0.25 B - 0.25 (33, 250 - 0.35 B)$$

$$\Rightarrow B = 15, 000 - 0.25 B - 8312.5 + 0.0875 B$$

$$\Rightarrow 1.1625 B = 6, 687.5$$

$$\Rightarrow B = 5752.69 \text{ (Rounded to two decimal places)}$$

Note that the journal entry in all three cases is

Bonus Expense	xxx	
Bonus payable		xxx

Bonus expense is an operating expense, therefore it's tax deductible. Bonus payable is reported as current liability in the balance sheet.

3.6 CONTINGENT LIABILITIES

- Contingency is uncertainty as to possible gain (gain contingency) or loss (loss contingency) to a business enterprise that ultimately will be resolved when a future event occurs or fails to occur. When uncertainty surrounding a gain contingency is resolved, it may result in an acquisition of an asset or the reduction of liability. When uncertainty surrounding a loss contingency is resolved, it may result in reduction of an asset or the incurrence of a liability.

What is the difference between potential liabilities from loss contingencies and estimated liabilities?

- Clarifying this point is very important in understanding this topic. The preparation of financial statements requires estimates for many business activities, and the use of estimates does not necessarily mean that a contingency exists. As an example, computing depreciation of plant assets is certain, what is the uncertain (therefore going to be estimated) is the periodic amounts of depreciation expense. To be loss contingency, it should have to be uncertain as to even its existence not merely its amounts. Therefore, not all uncertainties inherent in the accounting process give rise to contingencies.

Which contingencies require accrual in the accounting records, which contingencies require disclosure in a note to the financial statements, and which general risk contingencies require neither accrual nor disclosure?

- As you recall in contingency there is uncertainty, which is going to be resolved in the occurrence of certain events. There are three levels in the expectation of recurrence of future events, which in turn dictates their treatment – accrual, disclosure, or neither of them. Future events may be:
 - (i) Probable- likely to occur
 - (ii) Reasonably possible-more than remote but less than likely, or
 - (iii) Remote – slight chance of occurring

LOSS CONTINGENCIES

- There is uncertainty as to the existence and amounts of loss to be incurred. Examples include
 - Collectibility of receivable (i.e. loss as a result of failing to collect)
 - Liabilities for product warranties
 - Risk of damage to property by fire
 - Pending or threatened litigation
 - Selling of receivable or other assets through recourse
- To explain their accounting treatment, scrutinize the following table:

Probability as to the existence of loss contingency	Contingency can be reasonably estimated	Contingency cannot be Reasonably estimated
(1) Probable	Accrued & included in the financial statements	Not accrued but reported in a note to the financial statements
(2) Reasonably Possible	Not accrued, but reported in a note to the financial statements	Not accrued, but reported in a note to the financial statements
(3) Remote	Not accrued, a note to the financial statements is permitted but not required	Not accrued, a note to the financial statements is permitted but not required

→ Accrual of loss contingencies

- As can be seen and implied from the above table, a loss contingency is accrued
 - (a) Only when it is probable that an asset has been impaired or a liability incurred
 - (b) The amount of the loss can be reasonably estimated, and
 - (c) It must be probable that a future event will confirm the existence of the loss
- You should have to note that a mere exposure to risk does not require accrual of a loss. For example, the possibility that injury claims will be made against a business enterprise doesn't indicate that an asset has

been impaired or that a liability has been incurred, therefore, it is not going to be accrued.

- In some instances it is difficult to give single amount estimate for the loss contingency. Instead a range of loss can be reasonable estimated. With in the range no single amount appears to be a better estimate than any other amount. The minimum account in the range should be accrued, and any additional possible loss is disclosed in the note to the financial statements. To illustrate, assume that Tired Company had a lawsuit on the balance sheet date but the amount of the damage has not been yet decided. A reasonable estimate of the compensation is between Br. 300, 000 and Br. 700, 000, no amount in between is a better estimate than any other. Tired Company records this as follows:

Litigation Loss	300, 000
Liability from litigation	300, 000

The Company also discloses the additional Br. 400, 000 (i.e. Br. 700, 000 – Br. 300, 000) in the note to the financial statements.

- Now let us add examples of accruable loss contingency with their accounting treatment wherever practical.
 - **Gift Certificates** – are sold by retail stores to provide merchandise on some later date. The amount of liability is equal to the amount advanced by customers. As redemptions are made, the liability ledger account is debited and a revenue account is credited.
 - **Service Contracts** – Household appliances like refrigerator, TV, etc. are sold with their associated servicing contracts for a specified period of time. The amounts received for such service contracts constitute unearned revenue that will be earned by performance over the term of the contract. The actual costs of servicing will be recognized as expenses.

For example, Glorious Sets refrigerator service contracts for Br. 200 each on July 1 year 3. Assume 500 such service contracts are sold and agreeing to service the refrigerator for one year 50% of the contract

revenue is recognized until December 31, of year 3, which is the end of the fiscal period. Cost of Br. 20, 000 is incurred in servicing the contracts in this period. The remaining will be serviced in the coming fiscal period.

July 1. Cash (Br. 200 x 500)	100, 000	
Unearned Service Contract Revenue		
100, 000		
Dec. 31. Unearned Service contract Revenue (100, 000 x 0.5)	50, 000	
Service Contract Revenue		50, 000
20, 000		
Service contract expenses	20, 000	
Inventory, cash, Accrued payroll, etc		
20, 000		

- **Product Warranties** – Most business enterprises give warranties to replace or repair a product if it proves unsatisfactory during some specified time period. Estimating the liability under product warranty is a very difficult task. There are two alternative ways of recording such liability.

(1) Recording it at the time of sale

(a) Estimated liability at the time of sale

Product warranty expense	xxx	
Liability under product warranty		xxx
(b) Recording actual costs of servicing customer claims		
Liability under product warranty	xx	
Cash (or Accounts payable, inventories, etc)		xx

(2) Not recording it at the time of sale

(a) Estimated liability at the time of sale

No entry

(b) Recording actual costs of servicing customer claims

Product warranty expense	xxx
--------------------------	-----

Cash (or Accts payable, inventories, etc) xxx

(c) Potential claims outstanding are recorded at the end of the accounting period

Product warranty expense xx

Liability under product warranty xx

- **Coupons** – for promotional purposes, coupon is issued which is exchangeable for prizes such as cash or merchandise. The liability for the issuer is the cost of the prizes that are expected to be claimed by customers.

For example, assume that in year 5 Tana Trading issued coupons that may be redeemed for prizes costing Br. 5, 000 if all coupons are presented for redemption. Experience indicate only 90% of the coupon is presented for redemption, therefore the liability is Be. 4, 500 (i.e. Br. 5, 000 x 0.9).

→A merchandise for Br. 5, 900 is bought as a prize

Inventory of prize merchandise	5,900
--------------------------------	-------

Cash (or Accts payable)	5, 900
-------------------------	--------

→Tana Trading customers present coupons during year 5 in exchange for prize merchandise costing Br. 3, 200

Promotional expenses	3,200
----------------------	-------

Inventory of prize of merchandise 3, 200

→ Adjusting entry for the coupons outstanding (at the end of year 5)

Promotional expenses (4, 500 - 3, 200) 1, 300

Liability for coupons outstanding	1,300
-----------------------------------	-------

At the end of year 5, in the current asset, the inventory of prize of merchandise of Br. 2, 700 (5, 900 - 3, 200) is reported. And in the current liability, a liability for coupons outstanding of Br. 1, 300 is reported. In the income statement a promotional expense of Br. 4, 500 is reported.

- Loss contingencies that are not accrued

- Loss contingencies that do not meet the criteria for accrual, but which are at least reasonably possible as to their existence, are disclosed in the note to the financial statements. The disclosure should indicate the nature of the contingency and provide an estimate of possible loss, or state that such all estimates cannot be made. An example of such a loss contingency is a legal action whose unfavorable outcome is reasonably possible, but a reasonable estimate of loss cannot be made. Disclosure may not be required for a loss contingency involving law suits not yet filed, unless it appears probable that the lawsuit will be filed and that an unfavorable outcome is reasonably possible.
- For loss contingency, which are remote as to their existence, disclosure may still be permitted, but not required. Such contingencies include guarantees of indebtedness of others and agreements to reacquire receivables that had been sold.

GAIN CONTINGENCIES - as to the accounting treatments of gain contingencies, the following table gives you important information

Probability that contingency exists	Contingency can be reasonably estimated	Contingency cannot be reasonably estimated
(1) Probable	Note accrued, except in unusual situations; disclosure in a note to the financial statements is	Not accrued but reported in a note to the financial statements in a manner that does not give

	required	an impression gain is likely
(2) Reasonably Possible	Not accrued, but reported in a note to the financial statements in a manner that does not give an impression that realization of gain is likely	Not accrued, but reported in a note to the financial statements in a manner that doesn't give an impression realization of gain is likely
(3) Remote	No disclosure required	No disclosure required

Because of conservatism, Contingencies that might result in gains are recorded until the gains are realized or realizable. Examples of gain contingencies include probable favorable outcome of litigation and potential future income tax benefits of operating loss carry forwards.

3.7 PRESENTATION OF LIABILITIES IN THE FINANCIAL STATEMENTS

- Two questions arise in connection to the presentation of current liabilities in the balance sheet.
- What is the basis of ordering current liabilities?
Current liabilities may be reported in the order of maturity or according to amount (largest to smallest). These two bases can't be achieved together, and the compromise is to rank current liabilities in order of amount (largest to smallest), unless differences in maturity dates are significant (those maturing shortly after the balance sheet date comes first).
- What is the extent of disclosure required for different types of current liabilities?
The extent of disclosure depends on the purpose for which the balance sheet is prepared. The liabilities for presentation in annual reports is not as detailed as that prepared for short-term loan application.

3.8 SUMMARY

Current liabilities are obligations for which payment will require the use of current assets or the creation of other current liabilities in one year or one operating cycle, if longer. Certain liabilities are definitely measurable as to their amounts and existence. While others are dependant on the operating results of the business enterprise to determine the amounts of the liability such as bonus payable. In other extreme, some other liabilities are uncertain as to their existence and amounts, such liabilities are known as contingent liabilities.

3.9 ANSWERS TO CHECK YOUR PROGRESS

- | | |
|---|----------|
| 1. (a) Purchases (1, 000, 000 x 0.98) | 980, 000 |
| Trade Accounts payable | 980, 000 |
| (b) Trade Accounts payable (700, 000 x 0.98) | 686, 000 |
| Purchases Discounts Lost (200, 000 x 0.02) | 4, 000 |
| Cash | 690, 000 |
| (c) Purchase Discounts Lost (300, 000 x 0.2 x 0.02) | 1, 200 |
| Trade Accounts Payable | 1, 200 |
- Note - If 80% is estimated to be paid with in the discount period, the remaining 20% is paid after the discount period.
- | | |
|--|-------------------------|
| 2. * At the end of July, August, September, year 5 | Property Taxes expenses |
| 9, 000 | |
| there is a prepaid property taxes (for each month) | Prepaid property |
| taxes 9, 000 | |
- | | |
|---------------------------------|---------------------------|
| * At the end of October, year 5 | Property Taxes Expenses |
| 9, 000 | |
| | Property Taxes payable 9, |
| | 000 |
- | | |
|--|------------------------|
| * November 15, year 5, payment of the second | Property Taxes payable |
| 9, 000 | |
- | | |
|----------------------------------|--------------------------------|
| installment of property tax bill | Prepaid property taxes (5 x 9, |
| 000)45, 000 | |

	Cash	54, 000
* At the end of November, December-year 5 and January, February, March-year 6, there is 9, 000	Property Taxes Expenses	
a prepaid property taxes (for each month) 000	Prepaid property Taxes	9,

3.10 MODEL EXAMINATION QUESTIONS

Part I: True / False

- _____ 1. Gain contingencies are usually accrued and reported on the financial statement if probable or reasonably possible.
- _____ 2. A liability is measured as the present value of all future cash payments discounted at the interest rate consistent with the risks involved.
- _____ 3. All obligations with terms beyond normal trade terms explicitly or implicitly involve interest.
- _____ 4. Short-term obligations expected to be refinanced on a long-term basis are classified as long-term liabilities.
- _____ 5. Cash or other assets received in advance of the delivery of goods or services create liabilities for the receiving firm.

Part II: Multiple Choice

- _____ 1. A manufacturer of household appliances has potential costs due to the discovery of a possible defect in one of its products. The occurrence of the cost is reasonably possible and the costs can be reasonably estimated. This possible loss should be:

	<u>Accrued</u>	<u>Disclosed in Footnotes</u>
A.	No	No
B.	No	Yes

- | | | |
|----|-----|-----|
| C. | Yes | Yes |
| D. | Yes | No |

_____ 2. On September 1, 1990, Pine Company issued a note payable to National Bank in the amount of Br. 1, 800, 000, bearing interest at 12 percent and payable in three equal annual principal payments of Br. 600, 000. On this date the bank's prime rate was 11 percent. The first interest and principal payment was made on September 1, 1991. At December 31, 1991, Pine should record accrued interest payable of:

- A. Br. 44, 000
- B. Br. 48, 000
- C. Br. 66, 000
- D. Br. 72, 000

_____ 3. An expropriation of assets which is imminent and for which the amount of loss can be reasonably estimated should be

- | | <u>Accrued</u> | <u>Disclosed</u> |
|----|----------------|------------------|
| A. | No | No |
| B. | No | Yes |
| C. | Yes | Yes |
| D. | Yes | No |

_____ 4. When the occurrence of a gain contingency is reasonably possible and its amount can be reasonably possible and its amount can be reasonably estimated, the gain contingency should be:

- A. Include in net income and disclosed.
- B. Included as an appropriation of retained earnings
- C. Disclosed, but not included in net income
- D. Neither included in net income nor disclosed

- _____ 5. On January 2, year 5, Lee Company borrowed Br. 200, 000 from its major customer, Sun Corporation, evidenced by a promissory note payable in three years. The note did not bear interest. Lee agreed to supply Sun's merchandise needs for the loan period at favorable prices. The market rate of interest for this type of loan is 14%. Assume that the present value (at the market rate of interest) of the Br. 200, 000 note is Br. 135, 000 on January 1, year 5. what amount of interest expense is included in Lee's year 5 income statement?
- A. Br. 0 B. Br. 18, 000 C. Br. 21, 667 D. Br. 28, 000 E. None

Part III: Exercises

1. On January 6, 1990, Pom Company acquired prize merchandise costing Br. 5, 000 for distribution in a promotional campaign, and related coupons costing Br. 100 (an immaterial amount). During 1990, prize merchandise costing Br. 3, 100 was distributed to customers in exchange for coupons. Coupons redeemable for Br. 8, 000 of prize merchandise were issued to customers. The controller of Pom Company estimated that 90% of the coupons would be presented by customers who obtained the coupons from cartons of Pom's product. No expiration date appeared on the coupons.
Required: prepare journal entries for Pom Company in connection with the promotional campaign.
2. Cobb Company sells appliance service contracts to repair appliances for a two-year period. Cobb's past experience is that, of the total amount spent for repairs on service contracts, 40 percent is incurred evenly during the first contract year and 60 percent evenly during the

second contract year. Receipts from service contract sales for the two years ended December 31, 1992, are Br. 500, 000 in 1991 and Br. 600, 000 in 1992. Receipts from contracts are credited to unearned service contract revenue. Assume that all contract sales are made evenly during the year. What amount should Cobb report as unearned scenic contract revenue at December 31, 1992?

3. On October 1, 1990, Reed Travel Company borrowed Br. 40, 000 cash and signed a one-year note payable, due on September 30, 1991. The going rate of interest for this level of risk was 10 percent. The accounting period ends on December 31.

Required: Compute the face amount of the note assuming

- a) an interest-bearing note.
 - b) a non interest-bearing note
4. During a year, a bus driver stopped the bus suddenly and without a suit against the company for Br. 1, 000,000. The suit is pending. The company expects to be held liable and estimates that the final settlement will be between Br. 100, 000 and Br. 500, 000. What entry, if any, is appropriate?
5. Should Ethiopian Airlines show a liability for its frequent flier miles? If the company were forced to recognize a liability, how would you measure it?

3.11 GLOSSARY

- 1. Bonus: Conditional payment for achieving results better than usual.
- 2. Contingency: Uncertainty as to possible gain or loss to a business enterprise that ultimately will be resolved when a future event occurs or fails to occur.
- 3. Current Liability: Obligation for which payment will require the use of current assets or the creation of other current liabilities in one year or one operating cycle whichever ever is longer.

4. Lien Date: The date the taxes become legal claim against property until a debt on it is repaid.
5. Refinancing: Replacing short-term debt with either long-term debt or equity securities, or renewing, extending, or replacing the short-term debt with other short-term debt for more than one year from the date of the balance sheet.
6. Warranty: An agreement that obligates the seller or manufacturer to repair or replace a product within a specified period.

UNIT 4: PLANT ASSETS

Contents

- 4.0 Aims and Objectives
- 4.1 Introduction
- 4.2 Classification of Operational Long-term Assets
- 4.3 Plant Asset Costs
 - 4.3.1 Capital and Revenue Expenditures
 - 4.3.2 Measurement of Plant Asset Cost
 - 4.3.3 Costs Incurred after Initial Acquisition
- 4.4 Disposal of Plant Assets
 - 4.4.1 Retirements and Selling
 - 4.4.2 Exchanges
- 4.5 Insurance on Plant Assets
- 4.6 Summary
- 4.7 Answers to Check Your Progress
- 4.8 Model Examination Questions
- 4.9 Glossary

4.0 AIMS AND OBJECTIVES

- The aims of this unit are to explain what is included as costs of plant assets as well as the disposal of plant assets.

Having studied this unit you will be able to:

- understand the classification of long-term operational assets;
- distinguish between capital and revenue expenditures;
- explain the accounting for setting rid of plant assets;
- distinguish among retirements, selling and exchanges;
- explain loss recovered from insurance policy.

4.1 INTRODUCTION

- The term plant asset has so many variants like property, plant and equipment, fixed assets. The characteristics of plant asset are (i) it is tangible – it has a physical existence, and (ii) used in operations for more than one fiscal period-land acquired for speculative purposes or as a future building site is not plant assets, it is an investment. In this unit we focus over the cost of plant assets, the next unit deals with depreciation a topic, which is highly related to plant asset's cost.

4.2 CLASSIFICATION OF OPERATIONAL LONG-TERM ASSETS

- Broadly operational long-term assets are divided into tangible and intangible as it is explained below:

(a) Intangible

- Do not have physical existence
- Examples, include goodwill, copyrights, patents, trademarks, franchises, etc
- The costs of acquired intangible assets amortized over their estimated economic lives.

(b) Tangible

- They do have physical existence
- They are sub classified into plant assets and natural resources

(i) acquired for use in operation but they are not incorporated into finished goods as raw materials do.

- Examples of plant assets include land; buildings, machinery, equipment, leasehold improvements, etc.
- Almost all plant assets have limited economic lives. As a result their cost is converted to expense over the period of economic lives through the process of depreciation. The only exception to this limited life feature is land, so land is not going to depreciate.

(ii) Natural Resources

- These are resources that are going to be exhausted (i.e. finished) through extraction.
- Examples include oil and gas deposits, timber, mineral deposits, etc.
- The costs of acquiring and developing natural resources is allocated to expenses through a process of depletion.

4.3 PLANT ASSETS COSTS

- The costs of acquiring plant assets could be considered as long-term deferral, which is paying in advance for the future bundle of services going to be enjoyed but delaying to recognize them as an expense at the time of payment.
- The total cost of plant asset is the cash paid, or its equivalent, made to acquire the asset and place it in operating condition.
- As time passed by plant assets are going to depreciate and you can compute their carrying value (or book value) which is,

Cost-Accumulated Depreciation

The carrying value could be above or below the current fair value, but to stick to historical cost concept, what is important is their carrying value for financial accounting purposes.

- To give more insight in to this sub-topic, let us see it from three interrelated dimensions:

4.3.1 Capital and Revenue Expenditures

- Capital expenditures – initial expenditures that are included in the cost of the plant assets.
- Revenue expenditures – expenditures that are treated as current period expenses.

The theoretical test to differentiate capital expenditures from revenue expenditures is the fact that the service acquired by the costs incurred is going to serve one fiscal period or more. If it is going to be consumed in one fiscal period, then consider it as revenue expenditures whereas it is going to be enjoyed for more than one fiscal period, then it is capital expenditures.

LAND: – earlier in this unit we mentioned that land is non-depreciable. The initial cost of land include such items as the acquisition price, legal fees, escrow fees, title insurance, costs of surveying, clearing, demolishing unwanted structures, landscaping etc.

The costs incurred to make the land suitable for its intended purposes such as leveling hills and clearing trees are costs of the land. But we should have to note that land held as potential building site is not considered as land but as investment until it is going to be used in operation later.

LAND IMPROVEMENTS – some of the land improvements (such as landscaping and drainage) are as indefinite economic lives as that of land, so included in the land account. However, servers, streets and sidewalls are not as indefinite as that of land unless the city

administration agrees to replace them. As a result mixing them with the land may misstate the depreciation expenses.

BUILDINGS - There is a need to differentiate land from building costs, because the latter is depreciable. We will return to this point later on measurement. As you know, in big buildings project, certain temporary structures are made through corrugated iron to serve as office or stores, these costs are part of the building. The costs of liability insurance coverage during construction are as well part of the building account. However, the costs of tearing down an old building could be seen from two different angles:

- (a) If it has been acquired with the land with prior intention of demolishing it to prepare the land for the new building, it is included in the land account.
- (b) If it is used in operation after acquisition, it is treated as loss on retirement of old building (Neither part of land nor part of new building, it is periodic expense)

LEASEHOLDS AND LEASEHOLD IMPROVEMENTS - lease is not a much discussed topics in Ethiopia context although some of the plant assets (especially land) are only given on lease basis. There are two parties in the leasing transaction: the lesser, which is the owner, who transferred the right to use the property to the lessee who enters into contractual obligation to make future rent payments.

The leased items may be structurally altered by the lessee, which are going to be treated in the leasehold improvements. Accounting for leasehold improvements by the lessee is comparable with accounting for similar owned property, except that economic life should be related to the term of the lease. Unless the lesser pays for the leasehold improvement, the lesser doesn't record for the improvement made by the lessee.

MACHINERY AND EQUIPMENT – include several items such as furniture, fixtures, Machinery, vehicles, tools, computers, office equipment, etc.

INTEREST DURING CONSTRUCTION PERIOD – There are two opposing view for interest incurred on money borrowed for construction. There are individuals who advocate interest is the cost of finance (i.e. periodic interest expense), not a cost of obtaining asset services. Others support the view that it is cost of acquiring future asset services (i.e. Part of the plant assets).

The interest to be capitalized is the portion of interest cost during the acquisition period that could have been avoided if the asset had not been acquired. The acquisition period begins when all the following three conditions are met:

- (1)Expenditures for specific assets have been incurred
- (2)Activities to prepare the asset for use are in progress
- (3)Interest cost is being incurred

The capitalization of interest is going to end when the asset is completed and ready for use. From then on wards it is periodic expense.

Check Your Progress -1

1. Ethio Company constructed a four stories building. The construction activity started on April 1, and the building completed on Dec. 31. On April 1, the company borrowed Br. 600, 000 at 12% for 10 years for constructing the building. Additionally it uses Br. 300, 000 from its general borrowings of Br. 5, 000, 000 at 8% for the construction purposes. You are required:

- (i) to calculate the amount of interest to be capitalized
- (ii) to make the necessary Journal entries to show the interest capitalization.

4.3.2 Measurement of Plant Assets Costs

- Sometimes the method of acquisition obscures the acquisition price. In this case the question of - How is the cost of plant assets measured? - arises

CASH DISCOUNTS - When you purchase a plant asset if a discount is offered, record the plant asset net of discount.

SECURITIES ISSUED IN EXCHANGE FOR PLANT ASSETS - sometimes corporation issues shares of its common stock for plant asset. Here you are going to face the problem of determining the current fair value of (i) the plant assets, and

(ii) the common stock

The determination of the current fair value of plant assets could be substantiated by evidence than the fair value of common stock. To illustrate this point, if an equipment that was appraised Br. 350, 000 is acquired in exchange for 3, 000 shares of Br. 100 par common stock, the exchange is recorded

Equipment	350, 000	
Common Stock, 100 par (3, 000 x Br. 100)		300, 000
Paid-in capital in Excess of par		50, 000

PLANT ASSETS ACQUIRED BY GIFT - Federal or regional governments are at a time give plant assets to business organization in the form of gift. One might argue since the business organization doesn't incur cost, it should not have to be recorded at its current fair value. To illustrate this point, the Somalia Regional state offer to Tired PLC a land with current fair value of

Br. 500, 000 as an incentive to invest, in return TiredPlc is going to create a job opportunity for 50 individuals. How do you record this transaction?

Land	500, 000
Donated Capital	500, 000

LUMP-SUM ACQUISITIONS – Two or more plant assets may be acquired by making a single negotiated payment. Especially a building is acquired with the land on which it is built. The single sum paid should be allocated between land and building, because the latter is depreciable. For example, a building with its associated land is acquired for Br. 600, 000. How could we apportion the Br. 600, 000 between land and building? We should have to seek a more objective evidence of relative values such as valuation for property tax purposes. If the assessed valuation for property tax purposes is Br. 330, 000 for the building and 220, 000 for the land, the lump sum payment of Br. 600, 000 is apportioned by developing ratios,

	Building	Land	Total
Assessed valuation	Br. 330, 000		Br. 220, 000
	Br. 550, 000		
Relative values	60%		40%
100%			
Cost Allocation	360, 000		240, 000
600, 000			
Land	240, 000		
Building	360, 000		
Cash		600, 000	

DEFERRED PAYMENT CONTRACTS – Payment for plant assets are often made over an extended period of time. As a result there is a need to consider the time value of money (it has been discussed in earlier chapter). For example, machinery is acquired through a contract which call for Br. 20, 000 payment each at the end of the coming eight years. The implied interest in the contract is 10% per annum. On acquisition date, we can't record it at

Br. 160, 000 (Br. 20, 000 x 8), because the present value of ordinary annuity concept is ignored. From the table the present value of 8 equal payments of Br. 1 at 10% is Br. 5, 335. Therefore $PV = Br. 20, 000 \times 5, 335 = Br. 106, 700$

At the date of acquisition

Machinery	106, 700	
Discount on Equip contract payable		53, 300
Equipment contract payable		160, 000

1st payment at the end of the year

Equipment contract payable	20, 000	
Cash		20, 000
Interest expense (106, 700 x 0.1)	10, 670	
Discount on equip contract payable		10, 000

Check your progress -2

1. Record the second payment at the end of the second year.

11.3.3 Cost incurred after initial acquisition

Up to now we emphasize the cost incurred for the plant assets at the initial acquisition stage. But some expenditures, like repairs, are made after initial acquisition. Once again the controversy of revenue versus capital expenditures arise. The rule of thumb, at least academically, is expenditures that result in additional asset services, more valuable asset services, or extension of economic life are capitalized whereas expenditures to maintain plant assets in good operating condition; such as ordinary repairs, are

recognized in the current period expenses. Capital expenditures could be categorized as follows,

ADDITIONS – expenditure for new plant asset or an extension of an existing asset. As an example addition is going to be debited to respective plant asset accounts, it doesn't bring any new problem not mentioned above in this chapter.

IMPROVEMENTS/RENOVATION – it could be seen from three different angles

1. To the extent that renovation involves the substitution of a new part for an old one, the proper accounting is to remove the cost of the old part with its accumulated depreciation and to substitute the cost of the new part.

To illustrate, NAS FOOD Plc bought Machinery for Br. 400, 000 from China, of which Br. 80, 000 is estimated to be the cost of the power control unit of the machinery. The machinery has estimated economic life of 25 years but the power unit is replaced every ten years. Now assume that at the end of the ninth year, the power unit is replaced with more powerful apparatus for Br. 120, 000. The new power unit is expected to serve for 15 years. How do you record the replacement?

Solution, in the first place the machinery and the power unit should have separate accounts of their own and depreciated, let's say on straight-line basis, to their respective economic lives. Therefore, at the end of year nine, close those accounts related to old power unit and record the new one.

Loss on Retirement of power unit	8, 000
Accumulated Depreciation of power unit (80, 000 x 9/10)	72, 000
Power unit	80, 000
Power unit	120, 000
Cash	120, 000

2. A capital expenditure that improve the efficiency of plant assets without prolonging its economic life is debited to the plant asset and depreciated over the remaining economic life of the asset.
3. If the capital expenditure extends the economic life of the plant assets, it should have to be debited to Accumulated Depreciation. Because some of the service potential previously written-off has been restored.

4.4DISPOSAL OF PLANT ASSETS

- There are three modes of disposing a plant asset: retiring, selling and exchanging. Two things should have to be taken into account at the time of disposing a plant assets:
 - (1)Updating the accumulated depreciation
 - (2)Removing from the accounting records all ledger account balances relating to the plant assets

4.4.1 Retirements and Selling

To illustrate, machinery was acquired for Br. 250, 000 and it has a useful life of 10 years with no salvage value. Assume straight-line method of computing depreciation. Analyze the following independent cases:

Cast (1) The machinery retired at the end of its useful life.

Accumulated Depreciation	250, 000
Machinery	250, 000

Conclusion - no gain or loss is recognized in retirement of fully depreciated plant assets with out receipts of any proceeds.

Case (2) The machinery retired without proceed after eight and half year of services

Accumulated Depreciation	212, 500
Loss on Retirements	37, 500
Machinery	250, 000

Conclusion - Loss is recognized

Case (3) The machinery is sold for Br. 25, 000 after eight and half year of services

Cash	25, 000
Accumulated Depreciation	212, 500
Loss on sale	12, 500
Machinery	250, 000

Conclusion – a gain or loss is recognized on sale of plant assets with some recovery of net residual value.

4.4.2 Exchanges

- The exchange could be carried out with:

- Similar plant assets – in this case although loss is always recognized, the recognition of gain is not allowed unless cash is involved. The latter case is explained below. This complexity is the result of the fact that the earning process has not yet been completed.
 - Dissimilar plant assets – Here both the gains and losses are fully recognized. Because the earning process is completed. For example, a building that cost Br. 300, 000 could be exchanged for machinery with current fair value of Br. 350, 000, here Br. 50, 000 gain is recognized.
- Now, let us explain, the exchange of similar plant assets with examples. An old plant asset with cost of Br. 30, 000 and accumulated depreciation of Br. 25, 000 is exchanged for similar plant assets. Detailed information is given in each of the following cases.

(I) Non-monetary exchange – which is when no cash is involved in the exchange. Two of its cases are shown below:

(a) Exchanged for new plant asset with current fair value of Br. 3, 000.

Plant Asset (New)	3, 000
Accumulated Depreciation	25, 000
Loss on Exchange	2, 000
Plant Asset (old)	30, 000

Conclusion – loss is fully recognized

(b) Exchanged for new plant asset with current fair value of Br. 10, 500

Plant Asset (New)	5, 000
Accumulated Depreciation	25, 000
Plant Asset (Old)	30, 000

Conclusion - a gain of Br. 5, 500 (i.e. 10, 500 - 500) is not recognized because the earning process is not complete.

(II) Exchange where money as well is involved

- Case a and b below show when cash is paid or received but loss arises as with current fair value

(a) Old plant asset with current fair value of Br. 2, 300 (although its book value is Br. 5, 000) and a cash of Br. 1, 200 is paid to get new plant assets.

Plant Asset (New)	3, 500 (Br. 2, 300 i.e. FV of old + Br. 1, 200 i.e. Cash paid)
Accumulated Depreciation	25, 000
Loss on Exchange	1, 500
Plant Assets (old)	30, 000

(b) The old plant asset with current fair value of Br. 4, 000 is exchanged for new plant assets and Br. 400 is received in addition

Cash	400
Plant Asset (New)	3, 600 (Br. 4000 i.e. FV of old - Br. 400 i.e. cash received)
Accumulated Depreciation	25, 000
Loss on Exchange	1, 000
Plant Asset (Old)	30, 000

Conclusion - loss is recognized whenever it arises

Cases C and d show when gain arises as a result of exchange of similar plant assets. To see whether gain is recognized or not let's proceed.

(c) An old plant asset with current fair value of Br. 10, 200 and additional Br. 800 is paid to acquire similar new plant asset.

Plant Asset (new)	5, 800 (Br. 5, 000 i.e. Book value of old + Br. 800 i.e. cash paid)
Accumulated Depreciation	25, 000

Plant Asset (old)	30, 000
Cash	800

Conclusion – A gain of Br. 5, 200 (Br. 10, 200 i.e FV of old – Br. 5, 000 i.e. BV of old) has not been recognized. Because here cash is paid not received. The latter is explained in case D.

(d)An old plant asset with current fair value of Br. 10, 000 has been exchanged for similar new plant asset and Br. 800 is received in addition.

Cash	800
Plant Asset (New)	4, 600 (i.e. Br. 5, 000 i.e BV of old + Br. 400 i.e pain recognized – Br. 800 i.e. cash receive)

Accumulated Depreciation 25, 000

Plant Asset (old)	30, 000
Gain on Exchange	400

Conclusion – part of the gain is recognized by the cash receiving party, which is calculated as,

$$\text{Gain Recognized} = \text{Total gain} \times \frac{\text{Cash Received}}{\text{Total fair value of old plant asset}}$$

In our example, the total gain is Br. 5, 000 (Br. 10, 000 i.e. FV of old – Br. 5, 000 i.e book value of old). Therefore,

$$\text{Gain recognized} = \text{Br. 5, 000} \times \frac{\text{Br. 800}}{\text{Br. 10, 000}} = \text{Br. } \underline{400}$$

4.5INSURANCE ON PLANT ASSET

- Plant assets are insured for possible losses as a result of insurable events such as theft and fire. Losses are going to be recovered based on the current fair value of the asset destroyed.
- The amount of insurance carried on an asset should never exceed the current fair value of the asset, because the amount recovered never exceeds the current fair value of the asset. If the plant asset is not sufficiently insured, the insured (the one who has protected his plant asset by insurance) is co insuring the assets with the insurance Company. If an asset with current fair value of Br. 50, 000 is insured for only Br. 35, 000, the remaining Br. 15, 000 would be covered by the insured in the event of full destruction.

➤ **COINSURANCE CLAUSE** - The owner of plant asset would like to cover most losses with minimum cost coverage. For example, a building with current fair value of Br. 250, 000 is only insured for Br. 100, 000. If a fire damage causes Br. 50, 000 losses on the building, the owner would like to be compensated fully. But this thought is wrong, the insurer prevents it by adding co insurance clause. A co-insurance clause requires that an asset be insured for a specified minimum amount; say 80% of the current fair value, to fully recover losses up to the insurance coverage. Otherwise the insured has co-insured with the insurance company, even if the losses is less than the insurance coverage.

To illustrate this point, let's see the following example:

Carrying amount of building damaged by fire (Br. 350, 000 i.e. - Br. 200, 000 i.e		
(Cost - accumulated Depre.)Br. 150, 000		
Insurance Coverage (i.e. Policy bought)		Br.
100, 000		
Current fair value of the building at the date of the fire		Br.
250, 000		
Co-insurance requirement (80% the current fair value) - $250, 000 \times 0.8$		Br.
200, 000		
Amount of the loss		Br. 50, 000

Required – How much of the Br. 50, 000 loss is going to be covered by the insurance company? – The following simple formula gives the answer,

$$\frac{\text{Insurance Coverage}}{\text{Co-Insurance Requirements}} \times \text{Amount of loss}$$

$$\frac{\text{Br.100,000}}{\text{Br.200,000}} \times \text{Br. 50, 000} = \text{Br. 25, 000}$$

Note – If insurance is carried equal to or in excess of the amount required by the co-insurance clause, any loss up to the face amount of the policy is fully recoverable; if loss less than the required amount of insurance is carried, the loss is absorbed in part by the insured.

➤ **TWO OR MORE INSURANCE POLICIES**

- A plant asset could be insured by two or more insurer. The analysis could be carried out through two groupings:
 - (1) Any loss is shared by the insurance companies in proportion to the amount of insurance written by each company if
 - (a) there is no co-insurance clause, or
 - (b) two policies contain the same co-insurance requirements
 - (2) If the two policies contain different co-insurance clauses, the co-insurance formula is applied to each policy separately.

Check Your Progress Question -3

1. A building with current fair value of Br. 600, 000 is insured under two policies as follows:

Policy X	:	Br. 250, 000 (from Awash Insurance)
Policy Y	:	Br. 250, 000 (from Nyala Insurance)

A fire causes a damage of Br. 450, 000 to the building; compute the loss to be recovered from each policies under each of the following independent assumptions:

- (a) There is no co-insurance clause in the policies
- (b) An 80% co-insurance clause in both policies
- (c) A co-insurance clause of Awash is 90% while that of Nyala is 80%

4.6 SUMMARY

Those expenditures, which enhance the operating efficiency or prolong the useful life of plant assets, are going to be capitalized. While expenditure incurred to maintain the plant assets into normal operating condition is revenue expenditure i.e. it is going to be expensed.

There are three modes of disposal of plant assets, namely retirement, selling and exchange. In the exchange money, in addition, could be paid or received. Exchange accounting is some how complicated.

Insurance policy could be bought for plant assets against loss of fire, theft, etc. Insurance is not a gamble, you can't recover more than the current fair value of the loss incurred. There is as well a possibility of buying more than one policies for single plant assets.

4.7 ANSWER TO CHECK YOUR PROGRESS QUESTIONS

- 1 - (i) Ethio Company to construct the building it uses two sources of borrowings, namely
- (a) Direct borrowing
 - (b) General borrowings

Both of them taken into account in the process of calculating the interest to be capitalized. But first answer the question of-how long is the acquisition period?

It is from the date the construction starts i.e. April 1 to the date it ends i.e. Dec. 31. therefore, the acquisition period is 9 months. Only capitalize interest for this period.

→With regard to direct borrowing,

$$\text{Interest} = \text{Br. } 600,000 \times 0.12 \times 9/12 = \text{Br. } 54,000 \text{ (for 9 months)}$$

→With regard to general borrowings,

Average

$$\text{Monthly} = \text{Br. } 5,000,000 \times 0.08 \times 1/12 = \text{Br. } 33,333$$

Interest

$$\text{For 9 months} = 9 \times 33,333 = \text{Br. } 300,000$$

$$\begin{array}{rcl} \text{Average for the} & \text{Br. } 300,000 & \\ \text{Acquisition period} & \underline{\hspace{1cm}} & \\ & 2 & \\ = & & = \text{Br. } 150,000 \end{array}$$

Interest on the

$$\text{Average for the} = \text{Br. } 150,000 \times 0.08 \times 9/12 = \text{Br. } 9,000$$

Acquisition period

Therefore, interest to be capitalized is

Direct Br. 54,000

General 9,000

Br. 63,000

(ii) Building 63,000

Interest Expense 63,000

2. Once again Br. 20,000 is paid at the end of the second year. The problem here is-how much is the interest expense? interest is calculated on unpaid net obligation (contract payable - Discount on contract payable)

In year 1, it was (i.e Br. 160, 000 – Br. 53, 300) Br. 106, 700, now in year 2 both amounts are going to decrease as a result of previous year payment, contract payable is Br. 140, 000 (i.e Br. 160, 000 – Br. 20, 000) and the discount on contract payable Br. 42, 630 (Br. 53, 300 – Br. 10, 670). Interest expense of 10% is applied on Br. 97, 370 (Br. 140, 000 – Br. 42, 630). Therefore,

Equipment contract payable	20, 000
Cash	20, 000
Interest expense (97, 370 x 0.1)	9, 737
Discount on equip contract payable	9, 737

(3) a- If there is no co-insurance clause each insurer, in our activity, covers half of the loss (i.e. Br. 225, 000). Because from the total insurance of Br. 500, 000 each policy took 50% of it.

b- The total insurance coverage by two insurance cos (Br. 500, 000 = BVr. 250, 000 + Br. 20, 000) is greater than the minimum co-insurance requirement of Br. 450, 000 is going to be covered. How? 50% of the loss each (i.e. Br. 225, 000 each)

c- Here, the co-insurance formula is applied independently policy X:

$$\frac{\text{Br. 250, 000 (Insurance Coverage)}}{\text{Br. 250, 000 (Co-insurance Requirement) - 50, 000 (0.2)}} \times \text{Br. 450, 000 (loss)}$$

Br. 208, 333

Policy Y:

Although the Co-insurance requirement is Br. 480, 000 = 0.8 x 600, 000 (half of it is Br. 240, 000), it is insured for Br. 250, 000, Therefore,

$$\frac{\text{Br. } 250,000}{\text{Br. } 500,000} \times \text{Br. } 450,000 = \text{Br. } 225,000$$

(i.e. not co-insurance requirement but total insurance)

Therefore, the total damage recovered from insurance company is Br. 433, 333 (i.e. Br. 208, 333 + Br. 225, 000) which falls from the total loss by Br. 16, 667 (i.e. 450, 000 – Br. 433, 333). Because in policy X, although the Co-insurance requirement is Br. 540, 000 = Br. 600, 000 x 0.9 (half of it Br. 270, 000) only Br. 250, 000 is covered.

4.8 MODEL EXAMINATION QUESTIONS

Part I. True or False

1. All plant assets are depreciable.
2. Dembel City Center has currently started operation. The owner partly finance the construction through borrowing. The accountant capitalized the interest cost incurred after being operational.
3. A plant asset which cost Br. 250, 000 with 25 years of economic life and salvage value of Br. 50, 000 is depreciated on straight line basis for the last 20 years. A capital expenditure that improves the efficiency of the plant asset without prolonging its life is made. This expenditure is debited to accumulated depreciation account.
4. A gain of br. 40, 000 is recognized in an exchange of an equipment which worth Br. 500, 000 building with current fair value of Br. 540, 000.
5. Buying insurance policies from more than one insurer may result in receiving compensation more than the current fair value of plant asset.

Part II: Multiple Choices

1. A machinery is acquired under deferred payment contract on Jan 1 year 5. The first payment of Br. 25, 000 is made on January 1 Year 5, at the date of acquisition. Additional 10 payments of Br. 25, 000 is going to be made on December 31 of each year starting Dec. 31, year 5. The implied interest rate is 12%, At what amount the machinery account is debited on jan 1, year 5.
 - (A) Br. 275, 000 (Br. 25, 000 x 11)
 - (B) The present value of ordinary annuity of 11 rents of Br. 25, 000
 - (C) Br. 166, 250 (Br. 25, 000 + Br. 25, 000 x 12%)
 - (D) Br. 33, 050
 - (E) None of the above
2. Which of the following is not capital expenditures?
 - (A) Cost of removing soil to build foundation for new building
 - (B) Cost of installing equipment
 - (C) Cost of insurance policy during construction period
 - (D) Demolishing fully depreciated building for new construction
 - (E) Excess of operating expenses over revenue during the first year of operation
3. An old machinery with current fair value of Br. 25, 000 (it cost is Br. 100, 000 while its accumulated depreciation is Br. 85, 000) is exchanged for new machinery. In addition Br. 5, 000 is received. Choose the incorrect fact.
 - (A) Gain is not recognized since it's an exchange of similar plant assets
 - (B) The new machinery is debited by Br. 12, 000
 - (C) Gain on exchange of Br. 2, 000 is recognized
 - (D) Accumulated depreciation is debited for Br. 85, 000
 - (E) All except 'A'
4. With regard to disposing of old plant assets, which one is false?

- A. Loss is always recognized whether in an exchange of similar or dissimilar plant assets.
 - B. A retirement of partially depreciated plant assets with out receiving any proceeds result in a loss.
 - C. Selling a plant assets for more than its carrying value results in a gain.
 - D. Recognition of gain through exchange of similar plant assets is not allowed since the earning process has not been completed.
 - E. None of the above
5. In insuring a plant assets
- A. The amount of recoverable loss is not dependent on the carrying amount of the asset
 - B. There is no need to apply the co-insurance formula, if the insurance carried exceeds the coinsurance requirement.
 - C. If the insurance carried is less than the co-insurance requirements, the insurer is going to take part of the loss
 - D. Buying more than one insurance policies for a single plant assets may result in recovering amounts, which is more than the loss incurred.
 - E. All except 'D'

III. Exercises

1. KemissiePlc replaced old equipment with a new one having a list price of Br. 150, 000 subject to 2% discounts if paid with in 15 days. The following additional information is given:
- Net cost of removing old equipment to make room for the new one amounted to Br. 2, 500
 - Installation of new equipment cost Br. 1, 500
 - Costs of testing the new machine include
 - Br. 500 for spoiled materials
 - Br. 750 for operator's time

The discount has not been taken, because it's paid after the discount period.
What is the cost of new equipment for financial accounting purposes:

2. Zeway Company acquired at January 1, year 3. The method of payment is as follows:

Cash down payment	Br. 67, 000
Five promissory notes of Br. 75, 000 each, 12% interest, payable at the end of the year starting Dec. 31, year 3	Br. 375, 000

Record the acquisition in the accounting records of Zeway Company use the appropriate table from the time. Value of money discussion.

3. On April 5, year 8, Alpaha Company traded a machine with a cost of Br. 50, 000, a carrying value of Br. 15, 000, and a current fair value of Br. 20, 000, to Omega Company for similar new machine. Besides, Alpha received Br. 4, 000 from Omega. Pass the journal entries for this transaction from the perspective of

(i) Alpoha Company

(ii) Omega Company

4. On Septembe 9, year 6, a fire caused Br. 80, 000 in damage to ABC Plc's building that had a current fair value of Br. 400, 000 and a carrying amount of Br. 220, 000. ABC bought fire insurance policy from two insurer for the building,

- (i) From Ethiopian Insurance Corporation (EIC) - a fire insurance policy in the amount of Br. 160, 000 with an 80% Co-insurance clause
- (ii) From united insurance a fire insurance policy in the amount of Br. 170, 000 with 90% Co-insurance clause

Required - Compute the maximum amount of compensation that each insurer will pay to ABC Plc.

5. Dolfin Company is in the process of starting construction on a new machine it intends to use in its operations. Its expenditures to date and related debt outstanding for the month of May are as follows:

Accumulated Expenditures (May 1).....Br. 600, 000

Expenditures during may.....	100, 000
Trade payables (non interest-bearing)	
Outstanding May 1.....	Br. 60, 000
May 31.....	30, 000
Bank loan at 12%	700, 000

Required: Determine the amount of interest to capitalize on Dolfin's machine for the month of May.

4.9 GLOSSARY

1. Capital Expenditure: expenditures resulting in other assets that yield benefits in several accounting periods.
2. Insured - the party who will benefit from insurance.
3. Insurer - a company which insures
4. Intangible assets - assets that have no physical substance but have future economic benefits based on rights or benefits accruing to the assets' owner.
5. Natural resources - Physical substances extracted from the ground and converted into inventory; when sold, they produce revenue for the firm
6. Revenue Expenditures - expenditures, the benefits of which are used up or consumed in the current period.
7. Tangible assets - assets that have physical substance and capabilities, such as property, plant, equipment, and similar productive assets acquired by the company.

UNIT 5: PLANT ASSETS: DEPRECIATION AND DEPLETION

Contents

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- 5.7 Answers to Check Your Progress
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5.0 AIMS AND OBJECTIVES

This unit aims at discussing the factors involved in the accounting and recording of depreciation and depletion. In addition to a thorough

discussion of the accounting problems, the unit presents a detailed analysis and explanation of the various depreciation methods used in practice.

After you have studied this unit, you will:

- understand the concept of depreciation;
- be able to apply several depreciation methods and understand the incentives for choosing them;
- appreciate the relationship among depreciation, taxes and cash flows ;
- understand the concept of depletion.

5.1 INTRODUCTION

Accountants, engineers, appraisers, and economists all define depreciation differently, and they probably will continue to do so because each group uses depreciation in a different context. All agree, however, that most assets are on an inevitable “March to the rubbish heap”, and some type of write down or write off of cost is needed to indicate that the usefulness of an asset has declined. Depreciation is the term most often employed to indicate that tangible plant assets have declined in service potential. Where natural resources, such as timber, gravel, oil, and coal, are involved, the term depletion is employed. The expiration of intangible assets, such as patents, or goodwill, is called amortization.

5.2 DEPRECIATION

The concept of depreciation is linked closely to the measurement of net income. Because part of the service potential of depreciable plant assets is exhausted in the revenue generating process each accounting period, the cost of these services must be deducted from revenue in the measurement of net income; the expired cost must be recovered before a business enterprise is considered “as well off” as at the beginning of the period. Depreciation is the measurement of this expired cost.

To accountants, depreciation is not a matter of valuation but a means of cost allocation. Assets are not depreciated on the basis of a decline in their fair market value, but on the basis of systematic charges to expense. Depreciation is defined as the accounting process of allocating the cost of tangible assets to expense in a systematic and rational manner to those periods expected to benefit from the use of the asset.

5.3 FACTORS IN THE ESTIMATION OF PERIODIC DEPRECIATION

Before a pattern of charges to revenue can be established, three basic questions must be answered:

1. What depreciable basis is to be used for the asset?
2. What is the asset's useful life (Economic life)?
3. What method of cost allocation is best for this asset?

5.3.1 Depreciable Base for the Asset

The base established for depreciation is a function of two factors: the original cost and salvage or disposal value. We discussed historical cost in unit 4. Salvage value is the estimated amount that will be received at the time the asset is sold or removed from service. It is the amount to which the asset must be written down or depreciated during its useful life. To illustrate, if an asset has a cost of Br. 10, 000 and a salvage value of Br. 1, 000, its depreciable base or depreciable cost is Br. 9, 000 (Br. 10, 000 - Br. 1, 000). From a practical standpoint, salvage value is often considered to be zero because its valuation is small. Some long-lived assets, however, has substantial values.

The scrapping or removal of plant assets such as buildings, structures, and heavy equipment may involve substantial costs in the year of retirement. Theoretically, removal costs should be estimated and included in the depreciation base. The inclusion of removal costs in the depreciation base means that the entire cost involved in obtaining services from plant assets

will be allocated to the revenue generated by the assets, without regard to the timing of the expenditure. In practice, however, removal costs may be either disregarded or netted against the estimated residual value of the assets. The depreciable base for a plant asset thus becomes:

$$\textbf{\textit{Depreciable base = Cost - Estimated salvage value (net)}}$$

5.3.2 Estimate of Economic Life

The economic life of a plant asset is the total units of service expected to be derived from the asset. Accountants commonly measure economic life of a plant asset in terms of time units, for example, months or years. Economic life of a plant asset also may be measured in terms of output or activity, expressed in such physical units as miles, or machine-hours. Forces that tend to limit the economic life of a plant asset should be considered in the determination of the type of unit of service to use for a specific asset or group of assets. The cause of a decrease in economic life may be divided into physical deterioration (including causalities), and functional or economic factors.

Physical deterioration results largely from wear and tear from use and the forces of nature. These physical forces terminate the usefulness of plant assets by rendering them incapable of performing the service for which they were intended and thus set the maximum limit on economic life. Unusual events such as accidents, floods, and earthquakes also serve to terminate or reduce the economic life of plant assets.

Functional or economic factors may render a plant asset that is in good physical condition no longer useful because it is not economical to keep the asset in service, or because of legal or income tax considerations related to the use of the asset. Two primary causes of functional depreciation are

obsolescence and inadequacy obsolescence refers to the effect of innovations and technological improvements on the economic life of a plant assets. Inadequacy refers to the effect of growth and changes in the scale of a business operation in terminating the economic life of plant assets.

The choice of an appropriate unit of economic life of a plant asset also requires a determination of the causes of depreciation. The objective is to choose the unit most closely related to the cause of service exhaustion. When the economic life of a plant asset is limited largely by the effect of physical deterioration, a unit that reflects physical use of the asset is appropriate. For example, hours of service might be chosen as the unit of economic life of an electric motor; or miles of service for a truck. In contrast, the physical deterioration that limits the economic life of buildings probably is related more closely to the passage of time than to usage. Thus, an estimated economic life in terms of years is more appropriate for buildings.

5.3.3 Depreciation Methods

When the economic life of a plant asset has been estimated, and its depreciation base established, there remains the problem of determining the portion of cost that will expire with each unit of economic life. There are two major variables to be considered in reaching a solution to this problem:

1. The quality of services used may be equal or may differ during each accounting period of economic life.
2. The cost of various units of service may be equal or may differ during each accounting period of economic life.

There are several depreciation methods that attempt to recognize those factors in varying degrees. They may be classified as follows:

1. Straight-line method
2. Accelerated methods
 - a. Declining-balance method

- b. Sum-of-the-years'-digits method
- 3. Units-of-output method
- 4. Special depreciation methods
 - Inventory method
 - Retirement and replacement method
 - Group and composite method
 - Compound interest method

5.3.3.1 Straight-line Method

The straight-line method is based on the assumption that a plant asset declines in usefulness at a constant rate. The straight-line method relates depreciation directly to the passage of time rather than to the asset's use, resulting in a constant amount of depreciation recognized per time period.

The formula for computing periodic straight-line depreciation is:

$$\text{Annual straight-line depreciation} = \frac{\text{Cost} - \text{Residual Value net}}{\text{Years of estimated Economic Life}}$$

To illustrate the straight-line method of depreciation, assume that a machine is acquired on January 2, 1990 for Br. 7, 000 and that the net residual value of the machine at the end of four years of economic life is estimated at Br. 1, 000. The depreciation expense of the machine over its economic life is:

$$\text{Annual depreciation expense} = \frac{\text{Br. } 7,000 - \text{Br. } 1,000}{4} = \frac{\text{Br. } 6,000}{4} = \text{Br. } \underline{\underline{1,500}}$$

At the end of each year, depreciation expense of this machine is recorded as follows:

Depreciation Expense.....1, 500

Accumulated depreciation-machine.....1, 500

Check Your Progress -1

1. Given the following data for Jupiter Company for equipment.

Acquisition cost, January 1, 1995.....Br. 6, 600

Residual value.....600

Estimated Economic life.....5 years

Compute depreciation expense for 1995 using straight-line method?

5.3.3.2 Accelerated Method

The assumption that plant assets yield either a greater quantity of service or more valuable service in early years of their economic life has led accountants to devise methods of depreciation that result in larger amounts of depreciation in early years of economic life, and smaller amounts in later years. The three most widely used accelerated methods of depreciation are.

5.3.3.2.1 Declining-Balance Method

This method utilizes a depreciation rate (expressed as a percentage) that is some multiple of the straight-line method. For example, the double declining rate for a 10-year asset would be 20% (double the straight line rate, which is 10%). The declining-balance rate remains constant and is applied to the reducing book value each year. Unlike other methods, in the declining-balance method the salvage value is not deducted in computing the depreciation base.

The declining-balance rate is multiplied by the book value of the asset is reduced each period. Since the book value of the asset is reduced each

period by the depreciation charge, the constant declining-balance rate is applied to a successively lower book value that results in lower depreciation charges each year. This process continues until the book value of the asset is reduced to its estimated salvage value, at which time depreciation is discontinued. As indicated above, various multiples are used in practice, such as twice (200%) the straight-line rate (double-declining-balance method) and 150% of the straight-line rate etc.

To illustrate, assume that Famine Company recently purchased crane for digging purposes. Pertinent data concerning the purchase of the crane are:

Cost of crane.....Br. 500, 000
 Estimated Economic life.....5 years
 Estimated salvage value.....Br. 50, 000
 Productive life in hours.....30, 000 hours.

Using the doubles declining approach the depreciation expense per year is as follow:

	Book value of		Accumulated	Book
value				
Year	Asset at beginning of year	Rate	Depⁿ.Expense	Depⁿ. End of year
1	Br. 500, 000	40%	Br. 200, 000	Br. 200, 000 Br. 300, 000
2	300, 000	40%	120, 000	320, 000 180, 000
3	180, 000	40%	72, 000	392, 000 108, 000
4	108, 000	40%	43, 200	435, 200 64, 800
5	64, 800	40%	14, 800*	450, 000 50, 000

* Limited to Br. 14, 800 because book value should not be less than salvage value.

5.3.3.2.2 Sum-of-the-years'-Digits Method

This method results in a decreasing depreciation charges based on a decreasing fraction of depreciable cost (original cost less salvage value). Each fraction uses the sum of the years as a denominator and the number of years of estimated life remaining as of the beginning of the year as a

$$\frac{n(n+1)}{2}$$

numerator. The denominator is calculated as 2 where n is the economic life of the asset.

In this method, the numerator decreases year by year although the denominator remains constant. At the end of the asset's useful life, the balance remaining should be equal to the salvage value. Using the data for Famine Company above, the depreciation expense per year is calculated as follows:

Depreciation		Remaining life		Depreciation	
Year	Base	Book value	Fraction	Expense	End of year
1	Br. 450, 000	5	5/15*	Br. 150, 000	Br. 350, 000
2	450, 000	4	4/15	120, 000	230, 000
3	450, 000	3	3/15	90, 000	140, 000
4	450, 000	2	2/15	60, 000	80, 000
5	450, 000	1	1/15	30, 000	50, 000

$$* \frac{n(n+1)}{2} = \frac{5(5+1)}{2} = \frac{5(6)}{2} = 15$$

N.B The depreciation rate under the sum-of-years'-digits-method should be used for one full year (12 months)

Check Your Progress -2

1. A plant asset Cost Br. 56, 000, had an economic life of 8 years, and an estimated net residual value of Br. 2, 000.

- Compute depreciation Expense for the first year of economic life under the sum-of-the-years'-digits method of depreciation

- b. Assume that this asset was acquired on April 1, 1990. Compute depreciation expense for the full year ended Dec. 31, 1991, under the sum-of-the-years'-digits method of depreciation.

5.3.3.3 Units-of-output method

This method assumes that depreciation is a function of use or productivity instead of the passage of time. The life of the asset is considered in terms of either the output it provides (units it produces), or an input measure such as the number of hours it works. Conceptually, the proper cost association is established in terms of output instead of hours used, but often the output is not easily measurable. In such cases, an input measure such as machine hours is a more appropriate method of measuring the fair amount of depreciation charges for a given accounting period.

For Famine Company above, if the crane is used 4, 000 hours the first year, the depreciation charge is

$$\begin{aligned} \text{Depreciation expense} &= \frac{\text{Cost less salvage value}}{\text{Total estimated hours}} \times \text{Hours this year} \\ &= \frac{\text{Br. } 500,000 - \text{Br. } 50,000}{30,000} \times 4,000 \\ &= \text{Br. } 60,000 \end{aligned}$$

The major limitation of this method is that it is not appropriate in situations in which depreciation is a function of time instead of usage. For example, a building is subject to a great deal of steady deterioration from the elements (time) regardless of its use. In addition, where an asset is subject to economic or functional factors, independent of its use, the units-of-output method loses much of its significance. For example, if a company is

expanding rapidly, a particular building may soon become obsolete for its intended purposes (function).

Check Your Progress -3

1. Describe a situation in which the use of the output method of depreciation is appropriate.

5.3.3.3 Special Depreciation Methods

Sometimes an enterprise does not select one of the more popular depreciation methods because the assets involved have unique characteristics, or the nature of the industry dictates that a special depreciation method be adopted. Generally, these systems can be classified into five groups:

5.3.3.3.1 Inventory methods

The inventory method is used to value small tangible assets such as hand tools or utensils. A tool inventory, for example, might be taken at the beginning and at the end of the year; the value of the beginning inventory plus the cost of tools acquired for the year less the value of the ending inventory provides the amount of depreciation expense for the year. This method is appealing because separate depreciation schedules for the assets in use are impractical.

5.3.3.3.2 Retirement and Replacement Methods

The retirement and replacement methods are used principally by public utilities and railroads that own many similar units of small value such as poles, conductors, and telephones. The purpose of these approaches is to avoid elaborate depreciation schedules for individual assets. The distinction

between the two methods is that the retirement method charges the cost of the retired asset (less salvage value) to depreciation expense; the replacement method charges the cost of units purchased less salvage value from the units replaced to depreciation expense. In the replacement method the original cost (sometimes called aboriginal cost) of the old assets is maintained in the accounts indefinitely.

To illustrate these two methods, let us assume that the transmission lines of DOF Company originally cost Br. 1, 000, 000 and that 8 years later lines costing Br. 150, 000 are replaced with lines having a cost of Br. 200, 000. Any salvage value from the old transmission lines is considered a reduction of the depreciation expense in the period of retirement or replacement under both methods. Neither makes use of an accumulated depreciation account.

Entries under Retirement and Replacement Methods

Retirement method	Replacement method
Installation of lines - 1990	
Plant assets-lines.....1, 000, 000	Plant assets-lines -1, 000, 000
Cash.....1, 000, 000	Cash.....1, 000, 000
Retirement of old asset - 1998	
Depreciation Expense 150, 000	no entry
Plant assets-lines.....150, 000	
Cost of new asset - 1998:	
Plant assets-line.....200, 000	Depreciation Expense - 200, 000
Cash.....200, 000	Cash.....200, 000

5.3.3.3.3 Group and Composite Method

Depreciation methods are usually applied to a single asset. In certain circumstances, however, multiple-asset accounts are depreciated using one

rate. Two methods of depreciating multiple-asset accounts are employed: the group method and the composite method. The term group refers to a collection of assets that are similar in nature; composite refer to a collection of assets that are dissimilar in nature. The group method is frequently used where the assets are fairly homogeneous and have approximately the same useful lives. The composite approach is used when the assets are heterogeneous and have different lives.

The average depreciation or composite rate is determined by dividing the depreciation per year by the total cost of the assets.

5.3.3.3.4 Interest method of Depreciation

For many years the annuity and sinking fund methods of depreciation have received attention from accounting theorists because of their focus on cost recovery and rate of return on the investment in depreciable plant assets. A depreciable plant asset represents a bundle of future services to be received periodically over the economic life of the asset. The cost of such an asset may be viewed as the present value of the equal periodic rents (services) discounted at a rate of interest consistent with the risk factors identified with the investment in the plant asset.

▪ *Annuity method*

This method is appropriate when the periodic cost (depreciable) of using a long-lived plant asset is considered to be equal to the total of the expired cost of the asset and the implicit interest on the un recovered investment in the asset. Depreciation expense is debited and accumulated depreciation and interest revenue are credited periodically.

▪ *Sinking-Fund Method*

This method might be used when a fund is to be accumulated to replace a plant asset at the end of its economic life. Under the sinking-fund method, the amount of annual depreciation expense is equal to the increase in the

asset replacement fund. The increase in the fund consists of the equal periodic deposits (rents) plus the interest revenue realized at the assumed rate on the sinking-fund balance.

To illustrate the annuity method and sinking-fund method of depreciation, assume that a trunk with an economic life of five years and a net residual value of Br. 42, 117.50 is acquired for Br. 500, 000 at beginning of year 1.

Assume also that the fair rate of interest for this type of investment is 10% compounded annually.

Required: A) using annuity method

1. Compute the yearly depreciation expense using the annuity method.
2. Prepare a summary of annuity method of depreciation.
3. Present the journal entries to record depreciation at the end of year 1 using the annuity method.

B) Using sinking-fund method

4. Compute the yearly sinking-fund deposit using the sinking fund method of depreciation.
5. Prepare a summary of sinking-fund method of depreciation.
6. Present the journal entries to record depreciation using the sinking-fund method of depreciation for years 1 and 2

Solution:

1. Annual depreciation expense under annuity method.

$$\begin{aligned}
 \text{Depreciation} &= \frac{\text{Cost of asset less present value of net residual value}}{\text{Present value of ordinary annuity of 5 periods of 1 at 10\%}} \\
 &= \frac{\text{Br. } 500,000 - \text{Br. } 42,117.50 \times 0.620921}{3.790787} \\
 &= \text{Br. } \underline{\underline{125,000}}
 \end{aligned}$$

2. Summary of annuity method of depreciation.

Year	Dep ⁿ .Expense amount of	Implicit interest Carrying revenue	Credit to Accumulated Dep ⁿ . Account	accumulated Dep ⁿ . Account	Balance of Truck
0					Br. 500, 000
1	125, 000	50, 000	Br. 75, 000	Br. 75, 000	425, 000
2	125, 000	42, 500	82, 000	157, 500	342, 500
3	125, 000	34, 250	90, 750	248, 250	251, 750
4	125, 000	25, 175	99, 825	348, 075	151, 750
5	<u>125, 000</u>	<u>15, 192.50</u>	<u>109, 807.50</u>	<u>457, 882.50</u>	42, 117.50
Total	Br. <u>625, 000</u>	Br. <u>167, 117.50</u>	Br. <u>457, 882.50</u>		

3. Journal entries under the annuity method

Year 1: Depreciation expense.....125, 000
 Interest Revenue.....50, 000
 Accumulated depreciation.....75, 000

B. Sinking-fund method

4. Yearly sinking-fund deposit

$$\begin{aligned}
 & \frac{\text{Cost of asset less net residual value}}{\text{Amount of ordinary annuity of 5 periods of 1 at 10\%}} \\
 & = \frac{\text{Br. } 500,000 - \text{Br. } 42,117.50}{6.1051}
 \end{aligned}$$

= Br. 75,000

5. Summary of sinking-fund method of depreciation

Year	Annual of Deposit Dep ⁿ . amount	Interest Carrying revenue	Total fund Increase	Fund Balance	Dep ⁿ . Expense	Balance Acc.
Of Truck						
0						Br. 500,000
1	Br. 75,000	-	Br. 75,000	Br. 75,000	75,000	Br. 75,000
2	75,000	Br. 7,500	82,500	197,500	82,500	157,500
3	75,000	15,750	90,750	248,250	90,750	248,750
4	75,000	24,825	99,825	348,075	98,825	348,075
5	75,000	34,807.50	109,807.50	457,882.50	109,807.50	457,882.50
	42,117.50					

6. Journal entries under the sinking fund method.

Year 1: Sinking fund.....75,000
 Depreciation expense.....75,000
 Cash.....75,000
 Accumulated Depreciation.....75,000

Year 2: Sinking fund.....82,500
 Depreciation Expense.....82,500
 Cash.....75,000
 Interest revenue.....7,000
 Accumulated Depreciation.....82,000

5.4 DEPRECIATION METHODS AND MANAGEMENT DECISIONS

Plant assets play a large part in the productive process. It is easy to see that the cost of direct material and direct labor becomes a part of finished product. It is not always so clearly recognized, however, that a business enterprise also sells the services of the plant assets used to manufacture and market its products.

The importance of depreciation stems from the various management decision that are affected by it. To the extent that depreciation is a significant part of operating costs, and that operating costs are relevant in business decisions, the relative importance of various depreciation methods are significant in decisions relating to measurement of net income and impact of inflation, computation of income taxes payable, and investment capital.

The purpose of depreciation accounting is to measure the amount that must be recovered from revenue to compensate for the portion of plant asset cost that has been used up. This idea is embodied in the phrase maintenance of capital, which often is used in relation to income measurement. During an inflationary period, any depreciation method based on historical cost tends to understate the amount of capital consumed (depreciation). Thus, a part of reported net income essentially represents return of capital-users of financial statements should consider this shortcoming in the traditional income measurement model and should make appropriate adjustments to restate depreciation and net income in terms of current cost of plant assets.

Probably the strongest influence on depreciation policy is the income tax law. The direction of the influence is toward rapid depreciation deductions. Depreciation expense reduces taxable income and income tax expense.

The two most important questions relating to the role of depreciation in a capital investment decisions are: Is depreciation a relevant cost in the decision? How does depreciation affect the cash flows from the investment?

In essence, two kinds of costs are relevant to the decision to invest capital in productive assets: future costs (costs that will be incurred as the result of the decision) and incremental costs (costs that will change as the result of the decision). The expense represented by depreciation on existing plant assets is attributable to an investment made at some time in the past. Except to the extent that an existing plant asset may be sold and some portion of the past investment recovered, no present decision can change the amount of cost that has been sunk into that part. Thus depreciation often has been referred to as a sunk cost.

Investment decisions are frequently made on the basis of the expected rate of return on the investment. In the computation of rate of return, net cash flow from the investment generally is a more useful concept than net income from the investment. Depreciation expense does not generate cash directly; it is an expense that does not reduce cash, but is deducted to compute taxable income. Thus, depreciation expense indirectly generates larger cash flows from operations by reducing income taxes. For this reason, depreciation is viewed as a powerful instrument for increasing cash flows and reducing the pay back period (the number of years required to recover on investment in a plant asset) on new investments in plant assets.

Check Your Progress -3

1. The composite depreciation method:

- A) Is applied to a group of homogeneous plant assets?
- B) Is an accelerated method of depreciation?
- C) Disregard net residual value. In the computation of the depreciation base
- D) Does not involve the recognition of a gain or loss on the retirement of an individual plant asset of the group.

5.5 DEPLETION OF NATURAL RESOURCES

Depreciable plant assets usually retain their physical characteristics as they are used in operations. In contrast, natural resources in essence are long-term inventories of material that will be removed physically from their sources. In either case whether accountants are dealing with a “bundle of services” or a “store of material” – the basic problem is to determine the cost of the units of services or material that are consumed during each accounting period. The portion of the cost (or other valuation) assigned to property containing natural resources that is applicable to the units removed from the property is known as depletion.

The Depletion Base

The depletion base of property containing natural resources is the acquisition cost less the estimated net residual value of the property after the resource have been removed. The estimated cost of dismantling, abandoning, or restoring the property is taken into account in the determination of the net residual value of the property.

Acquisition cost of a natural resource includes the price paid for the property and legal fees, broker’s fees, and other fees incurred to acquire the property.

Estimate of Recoverable Units

The estimate of economic lives for plant assets is a relatively simple undertaking compared with the estimate of recoverable units of natural resources. The recoverable deposit of a natural resource should be measured in units of desired product, such as an ounce of silver or a pound of copper rather than in units of mined product, such as a ton of raw ore.

The most widely method of depletion for financial accounting is the output (units-of-production) method, which produces a constant depletion charge per unit of the natural resource removed. To illustrate, assume that early in year 7, Low Company acquired mining property for Br. 720, 000. It is

estimated that there are 1.2 million recoverable units of the natural resource, and that the land will have a net residual value (after restoration costs) of Br. 60, 000 when the resource is exhausted. The depletion per unit of output is computed as follows:

$$\begin{aligned} \text{Depletion} &= \frac{\text{Cost-net residual value}}{\text{Estimated total recoverable units}} \\ &= \frac{\text{Br. 720,000}-\text{Br. 60,000}}{1,200,000 \text{ units}} \\ &= \text{Br. 0.55 per unit} \end{aligned}$$

If Low Company removed 300, 000 units of the natural resources from the ground in year 7, the journal entry to record depletion is as follows:

Depletion (300, 000 x Br. 0.55).....	165, 000
Accumulated depletion of mining property.....	165, 000

Buildings and equipment used to remove natural resources may have an economic life shorter than the time required to complete the removal, in which case the depreciation of these assets should be recorded over their economic lives. Otherwise, depreciation is computed by the output method, similar to the computation of depletion.

The amount of cost depletion is included in the cost of the inventory of the natural resource and is recognized as an expense (cost of goods sold) only when the inventory is sold.

When additional costs are incurred in the development of mining properties or estimates of recoverable units are revised, the depletion rate is computed by dividing the carrying amount (cost less accumulated depletion, less net residual value) of the mining property (including any additional development costs) by the new estimate of recoverable units.

Check Your Progress -5

1. The cost of certain mineral rights is Br. 400, 000 and that the deposit is estimated at 1, 000, 000 tons of ore of uniform grade.

- (i) What is the depletion rate?

_____.

- (ii) If 90, 000 tons are mined during the year, what is the amount of depletion expense for the year?

_____.

5.6 SUMMARY

Depreciation, as defined in accounting, is the systematic allocation of the cost of a plant asset to expense. The cost allocation approach is justified because it matches costs with revenues and because fluctuation in market values is difficult to determine. An entry for depreciation is recorded during each year of the asset's useful life. The entry includes a debit to depreciation expense and a credit to accumulated depreciation.

To compute depreciation, an accountant must establish the depreciation base to be used for the asset, the asset's economic life, and the depreciation method to be used. Determination of the first two factors requires the use of estimates.

The depreciation method selected for a particular asset should be systematic and rational. In other words, the method selected should, to the extent possible, match the probable pattern of decline in an asset's services.

Depreciation expense reduces net income for the accounting period in which it is recorded even though a current cash outflow is not involved. However, depreciation should not be considered as a source of cash. Cash is generated by revenues, not accounting procedures.

Depletion refers to the process of recording the consumption of natural resources (wasting assets). The depletion base for the natural resources includes acquisition cost, exploration costs, and intangible development costs reduced by any residual value related to the land. Depletion is normally based on the number of units extracted during the period, which corresponds the units of production method of depreciation.

5.7 ANSWERS TO CHECK YOUR PROGRESS

1. Annual depreciation expense under the straight line method is computed as:

$$\begin{aligned}
 & \frac{\text{Cost} - \text{Estimated Residual Value (net)}}{\text{Estimated Economic Life}} \\
 &= \frac{\text{Br. } 6,600 - 600}{5} = \frac{\text{Br. } 6,000}{5} = \text{Br. } 1,200
 \end{aligned}$$

2. Computation of depreciation expense under sum-of-the-years' digits method:

$$\text{a) } (\text{Br. } 56,000 - \text{Br. } 2,000) \times 8/36^* = \text{Br. } \underline{12,000}$$

$$\text{b) } (\text{Br. } 54,000 \times 8/36 \times 3/12) + (\text{Br. } 54,000 \times 7/36 \times 9/12) = \text{Br. } \underline{10,875}$$



$$* (8 \times 9) \quad 2 = 36$$

3. The output method of depreciation is particularly appropriate when plant asset use fluctuates widely from year to year, and depreciation is more closely related to actual use than to functional obsolescence.

4. D



5. (i) The depletion rate is Br. 400, 000 1, 000, 000
= Br. 0.40/ton

(ii) Depletion expense for the current year is
= Br. 90, 000 x Br. 0.40/ton
= Br. 36, 000

5.8 MODEL EXAMINATION QUESTIONS

Part I: True/False

- _____ 1. The accounting concept of depreciation reflects the decline in value associated with a plant asset.
- _____ 2. Whenever the economic nature of the asset is the primary determinant of economic life, maintenance plays an extremely vital role in prolonging economic life.
- _____ 3. Because depreciation expense does not require the use of cash, it is theoretically correct to consider depreciation as a source of fund for the enterprise.
- _____ 4. The replacement depreciation method is used when a new asset is purchased to replace an old asset.
- _____ 5. The computation of depletion is essentially the same as the units-of-output method.

Part II:

- _____ 1. Which of the following most accurately reflects the concept of depreciation as used in accounting?

- A. The process of charging the decline in value of an economic resource to income in the period in which the benefit occurred.
- B. The process of allocating the cost of tangible asset to expense in a systematic and rational manner to those periods expected to benefit from the use of the asset.
- C. A method of allocating asset cost to an expense account in a manner, which closely matches the physical deterioration of the tangible asset involved.
- D. An accounting concept that allocates the portion of an asset used up during the year to the contra asset account for the purpose of properly recording the fair market value of tangible assets.

_____ 2. Which of the following depreciation methods does not consider salvage value in computing the depreciation base of the asset?

- A. Straight-line
- B. Sum-of-the-years'-digits
- C. Declining balance
- D. Units-of-output-method

_____ 3. ABC Company purchased a machine with a cost of Br. 165, 000 and a salvage value of Br. 9, 000 on April 1, 1993. The machine will be depreciated over a 12 year useful life using the sum-of-the-year'-digits method. The amount of depreciation ABC Company would record for the year ended 12/31/94 would be:

- A. Br. 22, 000
- B. Br. 24, 000
- C. Br. 16, 500
- D. Br. 22, 500

_____ 4. The economic factors related to an asset's service life include:

- A. Obsolescence
- B. Wear and tear
- C. Decay
- D. Unexpected casualties

_____ 5. Of the following costs related to the development of natural resources, which one is not a part of depreciable cost?

- A. Acquisition cost of the natural resource deposit.
- B. Exploration costs
- C. Tangible equipment costs associated with machinery used to extract the natural resource
- D. Intangible development costs such as drilling costs, tunnels, and shafts.

Part III: Exercises

1. Beckham Company purchased a mainframe computer on January 2, 1990, for Br. 1, 200, 000. The system has a useful life of six years, considering obsolescence. Its residual value is Br. 20, 000. Beckham Company uses the straight-line method.

The following events took place in 1991.

- a. March 1: peripheral equipment costing Br. 30, 000 was added to the mainframe. This equipment can be used with several different mainframes. Beckham Company may replace the mainframe before the disposal of the equipment.
- b. September 1: an additional memory device was added to the mainframe, costing Br. 250, 000. This device has no utility apart from the mainframe but will increase the total residual of the mainframe to Br. 40, 000.

Required: Provide the general journal entry to record depreciation expense for 1991 on the mainframe and related equipment.

2. Mite Engineering Company acquired a large number of small tools at the beginning of operations on January 1, 1990, for Br. 4, 000. During 1990 and 1991, Mite disposed of several used tools, receiving cash salvage value of Br. 400 in 1990 and Br. 500 in 1991. During 1991, Mite acquired additional tools at a cost of Br. 1, 600. Inventories of tools on hand, valued at current acquisition cost adjusted for the present condition of the tools, indicated a value of Br. 2, 800 on December, 1990, and Br. 3, 600 on December 31, 1991. Mite uses the inventory method of depreciation for small tools.

Required: Give the entries for the inventory system to record the above transactions. Include adjusting entries and the related closing entries.

3. Quick producers acquired factory equipment on January 1, 1992, costing Br. 39, 000. In view of pending technological developments it is estimated that the machine will have a resale value up on disposal in four years of Br. 8, 000 and that disposal costs will be Br. 500.

Estimated Economic life:

Years.....	4
Service hours	20, 000
Actual operations:	Service hours
1992	5, 700
1993	5, 000
2000	4, 800
2001	4, 400

Required: Round to the nearest birr and show computation:

1. Prepare a depreciation schedule for the service hour's method assuming the accounts are closed each December 31.
2. Compute depreciation expense for the first and second years assuming
 - a) Straight-line method
 - b) Sum-of-the-year'-digits method
 - c) Double-declining depreciation method
4. Arizona Mining Company acquired property with copper ore reserves estimated at 2 million pounds for Br. 1, 800, 000. The property will have an estimated value of Br. 1, 000,000 after the ore has been extracted. Before any ore could be removed, it was necessary to incur Br. 500, 000 of developmental costs. In the first year, 200, 000 pounds were removed and 160, 000 pounds of ore were sold; in the second, 400, 000 pounds were removed and 410, 000 pounds were sold. In the course of the second year's production, discoveries were made that indicated that if an added Br. 1, 460, 000 is spent on developmental costs during the third year, futtock removable ore will total 2.5 million pounds. After there added costs were incurred, production for the third year amounted to 510, 000 pounds with sales of 450, 000 pounds.

Required:

1. Calculate the total depletion amount and the depletion expense that Arizona should report on its income statement for each of the three years. Should supporting computations and round units costs to the nearest three decimal places (assume FIFO)
2. Give the journal entry to record depletion and depletion expense at the end of each of the three years.
5. Manara Corporation purchased the following assets January 1, 1990

Quantity	Type	Unit Cost	Estimated Unit	Unit
			<u>Salvage value</u>	<u>Useful life</u>
10	Truck	Br. 6, 000	Br. 1, 000	5 years

5 Bus 12, 000 2, 000 8 years

Using the composite system of depreciation, what is the composite rate based on cost?

5.9 GLOSSARY

1. Accelerated Depreciation: Depreciation methods that produce larger depreciation charges during the early years of an asset's life and smaller charges in the later years.
2. Depletion: The cost created by consuming the usefulness of natural resources.
3. Depreciation: The decrease in usefulness of all plant assets except land.
4. Declining balance method: A method of depreciation that provides declining periodic depreciation charges to expense over the estimated life of an asset.
5. Inadequacy: A condition in which the capacity of plant assets becomes too small for the productive demands of the business.
6. Obsolescence: A condition in which, because of new inventions and improvements, a plant asset can no longer be used to produce goods or services with a competitive advantage.
7. Salvage value: The amount that management predicts will be recovered at the end of a plant assets service life through a sale or as a trade-in allowance on the purchase of a new asset.
8. Straight-line method: A method that allocates an equal portion of the total depreciation for a plant asset (cost minus salvage) to each accounting period in its economic life.
9. Sum-of-the-years'-digits depreciation method: A method of depreciation that provides for declining periodic depreciation at a constant amount over the economic life of the asset.

10. Units-of-output method: A method of depreciation that provides for depreciation expense based on the expected productive capacity of an asset.

UNIT 6: LONG-TERM INVESTMENTS

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6.0 AIMS AND OBJECTIVES

After you have studied this chapter, you will:

- know why firms invest in debt and equity securities;
- understand the amount at which long-term investments are recorded at the date of acquisition;
- understand and be able to use the cost method of accounting and equity method of accounting for long-term investment in common stock;
- be able to account for investments in bonds;
- understand how to account for stock dividends, stock splits and stock warrants received by the investor;
- be able to account for investments in special purpose funds and cash surrender value of life insurance policies.

6.1 INTRODUCTION

In Financial Accounting -I, we discussed short-term investments in common stock, bonds etc. Such investments may be converted quickly to cash and are classified as current assets. Many business enterprises (termed investors) also make long-term investments in corporate securities such as stocks, bonds, mortgage notes, long-term receivables to create close business ties with other companies (termed inversee). These long-term investments are not current assets because they do not represent resources available to meet working capital needs.

The basis of distinction between short-term investments and long-term investments lies in the nature and purpose of the investment. Investments that are readily marketable and that may be sold without disrupting business relationships or impairing the operations of the business enterprise are classified as current assets. Investments made to foster business relationships with other enterprises are classified as long-term investments.

6.2 OBJECTIVES OF LONG-TERM INVESTMENTS

A business enterprise may make long-term investments in securities of other companies for many reasons. Among these are:

- to create close ties to major suppliers or to retail outlets.
- serve as a means of gaining control of a competitor
- to enhance its own income.
- to acquire ownership of a company with a strong cash position.
- to diversify the business risk.

6.3 ACQUISITION COST

The cost of an investment in securities includes the acquisition price plus brokerage fees and any other expenditures incurred in the transaction. If assets other than cash are given in payment for the securities, the cost of the securities acquired and the value of the non-cash assets given in exchange may be established by (1) the fair value of the non-cash assets or (2) the current market price of the securities, whichever is more objectively determinable.

If two or more securities are acquired for a lump sum or single price, the total cost should be allocated among the various securities. If the various securities acquired are publicly traded, the existing market prices serve as the basis for apportionment or allocation of the total cost. This type of cost apportionment is termed relative market value allocation.

Example

ABC Company acquires from XYZ Company 120 units of four shares of common stock and 12 shares of preferred stock each at a price of Br. 500 a unit, when the common stock is trading at Br. 40 and the preferred stock at Br. 120 a share. Compute the cost allocated to each kind of security.

Solution

Total cost of acquisition = $120 \times \text{Br. } 500 = \text{Br. } 60,000$

Market price of each unit = $(\text{Br. } 40 \times 4) + (\text{Br. } 120 \times 2) = \text{Br. } 400$

$$\begin{aligned} \text{Portion of cost allocated to common stock} &= \frac{\text{Br. } 160}{\text{Br. } 400} \times \text{Br. } 60,000 \\ &= \text{Br. } \underline{24,000} \end{aligned}$$

$$\begin{aligned} \text{Portion of cost allocated to preferred stock} &= \frac{240}{400} \times \text{Br. } 60,000 \\ &= \text{Br. } \underline{36,000} \end{aligned}$$

6.4 ACCOUNTING FOR LONG-TERM INVESTMENTS IN COMMON STOCK

Shares of stock may be acquired on the open market from a firm's stockholders, from the issuing corporation, or from stockbrokers.

There are three different methods of accounting for long-term investment in common stock, depending on which return an investor wishes to measure. These methods are:

1. Cost method - investment income consists only of dividends received.
2. Equity method - Investment income consists of the investor's proportionate share of the investee's net income.
3. Market value method - investment income includes dividends received and changes in the market value of the investment. The market value method is illustrated for short-term investments in Financial Accounting I. However, it is much less appropriate for long-term investments. By definition, long-term investments are not held to take advantage of short-term fluctuations in market prices. Therefore, either the cost method or the equity method generally is used to account for long-term investments in common stock.

6.4.1 The Cost Method of Accounting for Long-Term Investment in Common Stocks

Under this method a long-term investment is originally recorded and reported at cost. It continues to be carried and reported at cost in the investments account until it is either partially or entirely disposed of, or until some fundamental change in conditions makes it clear that the value originally assigned can no longer be justified. Ordinary cash dividends received from the investee are recorded as investment revenue.

This method is appropriate when an investor owns only a small portion (for example, less than 20%) of the total outstanding common stock of an investee so that the investor has little or no influence over the investee. In this case, the investor cannot influence the investee's dividend policy, and the only portion of the investee's dividend policy, and the only portion of the

investee's income that reaches the investor is the dividends paid by the investee.

Liquidating Dividends

When the dividends received by the investor in subsequent periods exceed its share of investee's earnings for such periods, the dividends should be accounted for as a reduction of the investment-carrying amount rather than as investment revenue. Such dividends are called *liquidating dividends*. Receipt of such dividends is recorded by a credit to the investment.

Example

X Company acquired 10% of Y Company's outstanding common stock at the beginning of 2002 for Br. 300, 000. Y Company reported net income of Br. 200, 000 on December 31, 2002 and paid cash dividends of Br. 250, 000 on January 10, 2003

The Journal entries to record the above transactions using cost method

(1) To record acquisition of the common stock

Investment in Y Company common stock	300, 000
Cash	300, 000

(2) To record cash dividends received on January 10, 2003

Total cash dividend received by X Company = $0.10 \times 250,000 = \text{Br. } 25,000$
Post-acquisition earnings, share of X Company = $0.10 \times 200,000 = \underline{20,000}$
Liquidating dividend Br. 5,000

Cash	25, 000
Dividend revenue	20, 000
Investment in Y Company common stock	5, 000

Permanent Decline in Value of Investment

Operating losses of the investee that reduce the investee's net assets substantially and seriously impair its future prospects all recorded as losses by the investor. A portion of the long-term investment has been lost, and this fact is recorded by reducing the carrying amount of the investment.

For example, the Journal entry to record a permanent decline of Br. 150, 000 in value of long-term investments in BESA Company common stock is as follows:

Realized Los in value of long-term investments 150, 000

Investments in BESA Company common stock 150, 000

To record a permanent decline in value of Long-term investments in common stock

Check Your Progress -1

1. Distinguish between the asset categories of short-term investments and long-term investments.

_____.

2. What are the objectives of long-term investments?

_____.

3. When is the cost method of accounting for long-term investment in common stock appropriate?

_____.

4. What is liquidating dividend?

_____.

6.4.2 Valuation at Lower of Cost or Market

Whenever the investment is in “Marketable equity securities” and the equity method is not appropriate (common stocks that are less than 20% interest or “lack significant influence”), the investor is required to use the lower of cost or market method in accounting for the investment. Securities qualify as “marketable equity securities” if

- (1) they represent ownership shares or the right to acquire or dispose of ownership shares in an enterprise at fixed or determinable prices, and
- (2) sales prices or bid and ask prices are currently available for such securities in the securities market.

Under the lower of cost or market method all non current marketable equity securities are grouped in a separate non current portfolio for purposes of comparing the aggregate cost and the aggregate market value to determine the carrying amount at the balance sheet date.

Accounting for non-current marketable equity securities is both similar to and different from accounting for marketable equity securities classified as current assets.

Similarity: the amount by aggregate cost of the non-current portfolio exceeds market value (unrealized loss) is accounted for as the valuation allowance.

Difference: Whereas changes in the valuation allowance for equity securities classified as current assets are included in the determination of income, accumulated changes in the valuation allowance for a marketable equity securities portfolio included in non-current assets are not put on the income statement but are included in the “equity” section of the balance sheet and shown separately (as a deduction from total stock holders’ equity)

Illustration

Assume the following transactions and information for GEDA Company

- (1) January 6, 2001, made long-term investments of Br. 1, 000, 000 in the common stock of several publicly owned corporations.
- (2) The aggregate market value of the investments was Br. 800, 000 at the end of 2001 and Br. 920, 000 at the end of 2002.
- (3) July 15, 2003, sold long-term investments that cost Br. 500, 000 for Br. 375, 000

(4)The aggregate market value of the remaining investments (cost, Br. 500, 000) was Br. 550, 000 at the end of 2003.

Required

- (A) Present the Journal entries to record the above transactions and information.
- (B) Determine the balance of (i) the investment, (ii) the allowance, and (iii) the unrealized loss account at the end of 2001, 2002 and 2003.
- (C) Show how the investment in marketable equity securities and the unrealized loss are presented in the balance sheets of GEDA Company at the end of 2001, 2002, and 2003

Solution

A. Journal entries to record the transactions and information

January 6, 2001

Long-term Investments in marketable

equity securities 1, 000, 000

Cash 1, 000, 000

December 31, 2001(unrealized loss = Br. 1, 000, 000 - Br. 800, 000 = Br. 200, 000)

Unrealized loss in value of long-term investments

in marketable equity securities 200, 000

Allowance to reduce long-term investments

in marketable equity securities to market value 200, 000

December 31, 2002(increase in market value (recovery) = Br. 920, 000 - Br. 800, 000

= Br. 120, 000)

Allowance to reduce long-term investment in

Marketable equity securities to market value 120, 000

Unrealized loss in value of long-term investments

in marketable equity securities 120, 000

July 15, 2003(realized loss = Br. 500, 000 - Br. 375, 000 = Br. 125, 000) = 375, 000

Realized loss on long-term investments

In marketable equity securities 125, 000

Long-term investments in

Marketable equity securities 500, 000

December 31, 2003

The increase in market value above cost (unrealized gain) of Br. 50, 000 (550, 000 - 500, 000) is not recognized. Instead, the balance left in the unrealized loss (200, 000 - 120, 000 = Br. 80, 000) is fully recovered and recorded.

Allowance to reduce long-term investments in

Marketable equity securities to market value 80, 000

Unrealized loss in value of long-term

Investments in marketable equity securities 80, 000

B. Account balance

(i) Long-term investments in marketable equity securities:

December 31, 2001 Br. 1, 000, 000

December 31, 2002 1, 000, 000

December 31, 2002 500, 000

(ii) Allowance to reduce long-term investments in marketable equity securities to market value:

December 31, 2001 Br. 200, 000

December 31, 2002 80, 000

December 31, 2003 -0-

(iii) Unrealized loss in value of long-term investments in marketable equity securities, December 31,

2001 Br. 200, 000

2002 80, 000

2003 -0-

C. Balance sheet presentation

Dec. 31 <u>2001</u>	Dec. 31 <u>2002</u>	Dec. 31 <u>2003</u>	
Investments:			
Long-term investment in marketable			
Equity securities, at cost	Br. 1, 000, 000	Br. 1, 000, 000	Br.
500, 000			
Less: Allowance to reduce long-term			
Investments in marketable equity			
Securities to market value	<u>200, 000</u>	<u>80, 000</u>	<u>-0-</u>
Long-term investments in marketable			
Equity securities, at lower of cost or market	Br. <u>800, 000</u>	Br. <u>920, 000</u>	Br.
<u>500, 000</u>			
Stockholders' equity:			
Total paid-in capital and retained earnings	Br. xxx, xxx	Br. xxx, xxx	Br. xxx, xxx
Less: unrealized loss in value of long-term			
Investments in marketable equity securities	<u>200, 000</u>	<u>80, 000</u>	<u>-0-</u>
Total stock holders' equity	Br. <u>xxx, xxx</u>	Br. <u>xxx, xxx</u>	Br. <u>xxx, xxx</u>

6.4.3 The Equity Method of Accounting for Long-Term Investments in Common Stock

When an investor Company acquires sufficient ownership in the voting stock of an investee Company to have significant influence over the affairs of the investee Company but less than a controlling interest, the investment is accounted for using the equity method. The investment is originally recorded at the cost of the shares acquired but is subsequently adjusted

each period for changes in the net assets of the investee. That is, the investment's carrying amount is periodically increased (decreased) by the investor's proportionate share of the earnings (losses) of the investee and decreased by all dividends received by the investor from the investee. The equity method recognizes that investee earnings increase investee net assets that underlie the investment, and that investee losses and dividends decrease these net assets.

Conceptually, the equity method treats the investee company as if it were condensed into one balance sheet item and one income statement item and then merged into the investor company at the proportion owned by the investor.

In the absence of evidence to the contrary, investments in which the investor company owns 20 percent or more of the outstanding voting stock of the investee Company, the investor company is presumed to have significant influence over the investee company. Thus, when an investor has an investment in the common stock of an investee company that results in significant influence but not control over the investee, the investment is accounted for by the equity method.

Illustration

The following transactions were occurred in the years 2002 and 2003:

Jan. 5, 2002, CABU Company acquired 24, 000 shares (20% of BATU Company common stock) at a cost of Br. 10 a share.

Dec. 31, 2002, BATU Company reported net income of Br. 100, 000

Jan. 20, 2003, BATU Company announced and paid a cash dividend of Br. 60, 000

Dec. 31, 2003, BATU Company reported a net loss of Br. 30, 000.

Required:

Present the Journal entries required to account for the investment in the books of CABU Company, using

- a. Cost method of accounting
- b. Equity method or accounting

Solution

a) Cost method

(1) Jan. 5, 2002

Investment in BATU Company	
Common stock (24, 000 x 10)	240, 000
Cash	240, 000

(2) Dec. 31, 2002

No entry

(3) Jan. 20, 2003

Cash (20% x Br. 60, 000)	12, 000
Investment income	12, 000

b) Equity method

Investment in BATU Company	
Common stock	240, 000
Cash	240, 000

Investment in BATU Company	
Common stock (20% x Br. 100, 000)	20, 000
Investment income	20, 000

Cash	12, 000
Investment in BATU Company common stock	12, 000

(4) Dec. 31, 2003

No entry	Loss on investment (20% x 30, 000)	6, 000
	Investment in BATU Company	
	Common stock	6, 000

Check Your Progress -2

- (i) For a non-current marketable equity securities portfolio, which of the following is included in net income of the investor for a specific accounting period?
 - a. Realized gains during the period
 - b. Unrealized losses during the period
 - c. Accumulated changes in the valuation allowance ledger account balance

d. Increases in the valuation allowance ledger account balance during the period.

(ii) An investor that uses the equity method of accounting for a 40% owned investee, which had net income of Br. 20, 000 and declared and paid dividends of Br. 5, 000 during 2003, prepaid the following Journal entries on December 31, 2003:

Investment in investee common stock	8, 000
Investment income	8, 000
Cash	2, 000
Dividend revenue	2, 000

The effect of the forgoing Journal entries on the balance sheet of the investor on December 31, 2003, is _____

6.5.4 Problems in the Application of Equity Method

Four problems may arise in the application of the equity method of accounting. Let us see them separately

(1) Inter company Profit (Gains) or losses

These are resulted from transaction between the investor and the investee. For example, an investor or an investee may sell merchandise or, less frequently, plant or intangible assets to its affiliate. Any unrealized profit (gain) or loss must be excluded from the net income of the investor.

Illustration

Assume that on November 20, 2003, Investor Company sold merchandise costing Br. 70, 000 to Investee Company for Br. 100, 000 or for a gross

profit rate 30% $\left(\frac{30,000}{100,000} \right)$. On December 31, 2003, the inventories of investee included Br. 60, 000 (at billed price) of this merchandise. In

addition, on December 19, 2003, investee sold land-costing Br. 90, 000 to investor for Br. 120, 000. Investee reported net income of Br. 150, 000 for 2003 but did not declare dividends for that year. Investor has a 50% ownership in investee.

Investor prepares the following Journal entries on December 31, 2003, under the equity method of accounting:

a. Investment in investee company

Common stock (Br. 150, 000 – Br. 30, 000) x 0.50	60, 000
Investment income	60, 000

To record 50% of net income of investee company
For 2003 after elimination of Br 30, 000 unrealized
Gain on disposal of land (Br. 120, 000 – Br. 90, 000)

b. Income summary (Br. 60, 000 x 0.30)	18, 000
Deferred Gross profit on sales	18, 000

To defer unrealized gross profit attribute to
Merchandise in investee company's inventories on Dec. 31, 2003

(2) Cost in Excess of (lower than) Equity Acquired

(i) Cost in Excess of equity acquired

Often an investor will pay more than the underlying equity of an investment because:

- Current fair values of the investee's identifiable assets may be larger than their carrying amounts, or the investee has unrecorded goodwill or other intangible assets.

The excess amount would be amortized over the economic lives of the undervalued assets or the unrecorded assets as follows:

Investment income (ordinary)	xxx
Investment in investee company common stock	xxx

(ii) Cost Less than Equity Acquired

When an investor acquires an investment in common stock at a cost less than the underlying equity, it is assumed that specific identifiable assets of

the investee are overvalued. If these assets have limited economic lives, the investor allocates the excess of the underlying equity over cost to investment income over the economic lives of the assets as follows:

Investment in investee company common stock	xx
Investment income (ordinary)	xx

Example

Assume that ZEGA Corporation acquired Br. 200, 000 a 20% interest in outstanding common stock of BEZA Company. ZEGA's long-term investment enabled it to exercise significant influence over BEZA's operating and financial policies.

Case 1

BEZA's stock holders' equity attributable to the common stock acquired by ZEGA was Br. 160, 000 and the excess Br. 40, 000 paid by ZEGA was attributable to unrecorded goodwill which had a remaining life of 10 years. The yearly amortization of Br. 40, 000 excess is recorded as follows:



Investment income (Br. 40, 000	10)	4, 000
Investment in BEZA Company common stock		4, 000

Case 2

BEZA's stockholders' equity attributable to the common stock acquired by ZEGA was Br. 220, 000. The Br. 20, 000 power amount is attributable to overvalued building that had remaining economic life of 20 years.

The yearly amortization of Br. 20, 000 is recorded as follows:



Investment in BEZA Company common stock (Br. 20, 000	20)
1, 000	
Investment income	1,
000	

(3) Investor's closing Entries under Equity method

An investor that uses the equity method of accounting for an investment in common stock closes the balances of the investment income ledger accounts to retained earnings only if the investee declared dividends in the amount of its net income accrued by the investor under the equity method of accounting. Any amount of investment income not paid as dividends by the investee is closed to the investor's retained earnings of investee ledger account rather than to retained earnings, because those undistributed earnings of the investee are not available for the declaration of dividends by the investor.

Example

After closing all revenue (including investment income) and expense accounts of the investor had been posted, the income summary ledger account had a credit balance of Br. 350, 000 on December 31, year 1. During year 1, investee had reported net income of Br. 100, 000 and declared and paid dividends of Br. 60, 000.

Investor has 30% ownership in investee.

Investor's Journal entry to close the income summary ledger account on December 31, year 1 is as follows:

Income summary	350, 000
----------------	----------

Retained earnings of investee	12, 000*
Retained earnings (350, 000 - 30, 000)	338, 000

* 12, 000 = (Br. 100, 000 - Br. 60, 000) x 0.30

(4) Retroactive Application of Equity Method

If an investor acquires sufficient voting stock to influence an investee in a series of acquisitions rather than a single one, the equity method of accounting is applied retroactively when the investor has acquired 20% of the investee's common stock.

Example

On January 2, 2002, Nasir Company acquired for Br. 100, 000 a 10% interest in the outstanding common stock of Getu Company, which had total stockholders' equity of Br. 1, 000, 000 on that date. Getu Company had net income of Br. 140, 000 for 2002 and declared and paid dividends of Br. 80, 000 on December 31, 2002. On January 2, 2003, Nasir Company acquired an additional 30% interest in Getu's outstanding common stock for Br. 318, 000. After acquisition of the additional 30% interest, Nasir was able to exercise significant influence over Getu's operating and financial policies.

The Journal entries to record the above information are as follows:

January 2, 2002

Investment in Getu Company common stock	100, 000
Cash	100, 000

To record acquisition of 10% of outstanding common stock of Getu Company

December 31, 2002

Cash (Br. 80, 000 x 0.10)	8, 000
Dividend Revenue	8, 000

To record receipt of dividend from Getu Company

January 2, 2003

Investment in Getu Company common stock	318, 000
Cash	318, 000

To record acquisition of additional 30% interest of
Outstanding common stock of Getu Company

January 2, 2003

Investment in Getu Company common stock	6, 000
Retained earnings of investee	

To change retroactively accounting for investment in Getu Company to equity method from cost method, and to record retroactively 10% share of Getu's net income for year ended December 31, 2002 (Br. 140, 000 – Br. 80, 000) x 10%

Check Your Progress -3

1. Explain the use of the retained earnings of investee ledger account under the equity method of accounting for a long-term investment in common stock.

6.5 ACCOUNTING FOR LONG-TERM INVESTMENT IN BONDS

A bond arises from a contract known as an indenture and represents a promise to pay: (1) a sum of money at a designated maturity date, plus (2) periodic interest at a specified rate on the maturity amount (face value)

6.5.1 Computation of Acquisition price of long-term investments in bonds

Investments in bonds should be recorded on the date of acquisition at cost, which includes brokerage fees and any other costs incidental to the purchase. The cost or purchase price of a bond investment is its market value, which is determined by the market's appraisal of the risk involved and consideration of the stated interest rate in comparison with the

prevailing market (yield) rate of interest for that type of security. The cash amount of interest to be received periodically is fixed by the stated rate of interest on the face value.

As you see there are two types of interest on the bond nominal interest rate (the rate at which the fixed interest is payable) and yield rate (the market rate of interest). The cost of an investment in bonds (market value at acquisition) is the present value of the future cash receipts pursuant to the bond contract, measured in terms of the market (yield) rate of interest at the time of investment.

⇒ Cost of investment in present value of the face amount

bonds = discounted at market interest rate for n periods

+ present value of ordinary annuity of n interest receipts discounted at market interest rate.

If the rate of return desired by the investors (yield rate) is exactly equal to the stated rate, the bond will sell at its **face amount**. If investors demand a higher yield than the normal rate, the bond will sell at a discount. If the yield rate is below the stated rate, investors will pay a premium, more than maturity value, for the bond.

6.5.2 Acquisition of Bonds between Interest Rates

If bonds are purchased between interest payment dates, the investor must pay the owner the market price plus the interest accrued since the last interest payment date. The investor will collect this interest plus the additional interest earned by holding the bond to the next interest date.

Example

Investor purchased on July 1 of bonds having a Br. 100, 000 face value and paying 12% interest on May 1 and November 1, for 97. The Journal entry to record purchase of the bonds and accrued interest is as follows:

Investment in Bonds (97% x Br. 100, 000)	97, 000
--	---------

Interest receivable (Br. 100, 000 x 0.12 x 2/12)	2, 000
--	--------

Cash

99, 000

On November 1, the investor will receive interest of Br. 6, 000 (Br. 100, 000 x 0.12 x 6/12) Consisting of Br. 2, 000 paid at date of acquisition and Br. 4, 000 earned for holding the bond for four months (July 1 to November 1)

6.5.3 Discount and Premium on Long-Term Investment in Bonds

On the date of acquisition of bonds, the investment ledger account is debited for the cost of acquiring the bonds, including brokerage and other fees, but excluding any accrued interest. A separate discount or premium ledger account as a valuation account is not usually used. The subsequent treatment of the investment might be handled in one of the three ways:

- (1) The investment might be carried at cost, ignoring the accumulation of discount or amortization of premium.
- (2) The investment ledger account balance might be revalued periodically to reflect market value changes
- (3) The discount or premium might be accumulated or amortized to reflect the change in the carrying amount of the bonds based on the effective rate of interest prevailing at the time of acquisition.

The first alternative is used primarily in accounting for short-term bond investments, for convertible bonds, and for other bonds for which the discount or premium is insignificant.

The second alternative is not in accord with the present interpretation of the realization principle or the concept of conservatism, especially during periods of rising bond prices. When the investment in bonds is in jeopardy because of serious cash shortages of the issuer, it generally is acceptable to write the investment down to its expected net realizable value and to recognize a loss.

The third alternative is the preferred treatment for long-term investments in bonds. This approach recognizes that the interest revenue represented by the discount, or the reduction in interest revenue represented by the premium, accrues over the term of the bonds. This method is consistent with the principle that requires assets other than cash and receivables to be recorded at cost.

Methods of discount accumulation or premium amortization

Two methods: interest method and straight-line method.

Interest method

This method produces a constant rate of return on the investment in bonds. The interest revenue is computed for each interest period by multiplying the balance of the investment at the beginning of the period by the effective interest rate at the time the investment was made

→ Discount accumulated	Interest revenue Computed By effective rate of	-	Periodic cash receipt
→ Premium amortized	Periodic cash receipt	-	Interest revenue computed by effective interest rate

Straight-Line Method

The discount or premium is spread uniformly over the term of the bonds. The periodic discount to be accumulated or premium to be amortized =

$$\frac{\text{Total premium/discount}}{\text{number of periods}}$$

Periodic interest revenue = Periodic cash receipt – discount accumulated
Or periodic cash receipt + premium amortized

Illustration

DAWA Company acquired Br. 1, 000, 000, 10% bonds of JARA Company that will mature after 25 years. The bonds yield: Case 1 - 12% compounded semiannually

Case 2 - 8% compounded semiannually

The bonds pay interest semiannually starting six months from date of acquisition.

Required

- (1) Compute the periodic interest to be collected on the investment
- (2) Compute the acquisition price of the bonds under case 1
- (3) Compute the amount of the periodic accumulation of discount under case 1 using the straight-line method
- (4) Present the Journal entry necessary to record the acquisition of the bonds under case 1
- (5) Compute the acquisition price of the bonds under case 2
- (6) Compute the amount of the periodic amortization of premium under case 2 using the straight-line method
- (7) Present the Journal entry necessary to record the acquisition of the bonds under case 2
- (8) Present the Journal entry necessary to record receipt of interest at the end of the first six-month period under case 1 using (a) The interest method
(b) The straight-line method
- (9) Present the Journal entry necessary to record receipt of interest at the end of the second six-month period under case 1 using (a) The interest method
(b) The straight-line method
- (10) Present the Journal entry necessary to record the receipt of interest at the end of the first six-month period under case 2 using (a) the interest method (b) the straight-line method

(11) Present the Journal entry to record the receipt of interest at the end of the second six-month period under case 2 using (a) the interest method (b) the straight-line method.

Solution

$$(1) \text{Periodic interest to be collected} = \text{Br. } 1,000,000 \times 10/100 \times \frac{1}{2} \\ = \text{Br. } 50,000$$

(2) Acquisition price under case 1 (12%):

$$(I = 12/2\% = 6\% \quad n = 25 \times 2 = 50)$$

Present value of Br. 1,000,000 discounted at 6%

for 50 six-month periods (Br. 1,000,000 x 0.054288) Br. 54,288

Add: Present value of ordinary annuity of 50 rents

Of Br. 50,000 discounted at 6% (Br. 50,000 x 15.76186) 788.093

Acquisition price of the bonds Br. 842,381

$$(3) \text{Discount} = \text{Br. } 1,000,000 - \text{Br. } 842,381 = \text{Br. } 157,619$$

Amount of periodic accumulation of discount



$$\text{Under case 1} = \text{Br. } 157,619 \quad 50 = \text{Br. } 3,152$$

(4) Journal entry to record acquisition under case 1

Investment in JARA Company bonds 842,381

Cash 842,381

(5) Acquisition price under case 2 (8%) ($I = 8\%/2 = 4\%$)

Present value of Br. 1,000,000 discounted at 4%

For 50 six-month periods (Br. 1,000,000 x 0.140713) Br. 140,713

Add: PV of ordinary annuity of 50 rents of Br. 50,000

Discounted at 4% (Br. 50,000 x 21.482185) 1,074,109

Acquisition price of bonds Br. 1,214,822

$$(6) \text{Premium} = \text{Br. } 1, 214, 822 - \text{Br. } 1, 000, 000 = \text{Br. } 214, 822$$

Amount of the periodic amortization of premium under case 2



Using straight-line method = Br. 214, 822 50 = Br. 4, 296

(7) Journal entry to record acquisition under case 2

Investment in JARA Company bonds	1, 214, 822
Cash	1, 214, 822

(8) Journal entry to record receipt of interest at the end of the first six-month period under case 1

(a) Interest method

Cash	50, 000
Investment in JARA Company bonds	543
Interest Revenue	50, 543

Computation

Interest Revenue (Br. 842, 381 x 12/100 x ½) - Br. 50, 543	
Interest receipt	<u>50, 000</u>
Accumulation of discount	Br. <u>543</u>

(b) Straight-line method

Cash	50, 000
Investment in JARA Company bonds	3, 152
Interest Revenue	53, 152

(9) At the end of the second six-month period

(a) Interest method

Cash	50, 000
Investment in JARA Company bonds	575
Interest Revenue	50, 175

Computation

Interest revenue (Br. 842, 381 + Br. 543) x 12/100 x ½ = Br. 50, 575	
Less: Interest receipt	<u>50, 000</u>

Accumulation of discount Br. 575

(b) Straight-line method

Cash	50,000	
Investment in JARA Company bonds		3,152
Interest Revenue	53,152	

(10) At the end of the first six-months (case 2)

(a) Interest method

Cash	50,000	
Investment in JARA Company bonds		1,407
Interest Revenue	48,590	

Computation

Interest revenue (Br. 1,214,822 x 8/100 x $\frac{1}{2}$) = Br. 48,593

Interest receipt 50,000

Premium amortization Br. 1,407

(b) Straight-line method

Cash	50,000	
Investment in JARA Company bonds		4,296
Interest Revenue	45,704	

(11) At the end of the second six-months (case 2)

(a) Interest method

Cash	50,000	
Interest Revenue	1,463	
Interest Revenue	48,537	

Computation

Interest revenue (Br. 1,214,822 - Br. 1,407) x 8/100 x $\frac{1}{2}$ = Br. 48,

537

Interest receipt 50,000

Premium amortization Br. 1,463

(b) Straight-line method

Cash	50,000	
------	--------	--

Investment in JARA Company bonds	4, 296
Interest Revenue	45, 704

Check Your Progress -4

1. Distinguish between the interest method and the straight-line method of accumulating a discount and amortizing a premium on a long-term investment in bonds.

6.6 SPECIAL PROBLEMS IN ACCOUNTING FOR LONG-TERM INVESTMENTS IN SECURITIES

6.6.1 Cost identification

Investments in securities may pose a problem as to which costs should be offset against revenue in the period of sale. Because securities usually are identified by a certificate number, it would be possible to use specific identification of stock certificates to establish the cost of securities sold. However, an alternative cost flow assumption might be adopted. The alternative methods of cost flow include:

- (1) FIFO – The first shares acquired are assumed to be the first ones sold
- (2) LIFO – The last shares acquired are assumed to be the first ones sold
- (3) Weighted-average cost – each share is assigned the same cost basis.

Income tax rules require the use of either the specific identification method or the FIFO method to measure the gain or loss. The specific identification method usually is more advantageous for income tax purposes, because it allows the investor to select for sale the securities that will have the most desirable tax consequences.

6.6.2 Accounting for stock dividends and stock splits

Although a stock dividend might be different from stock splits from the point of view of the issuer, the two are virtually identical from the point of view of the investor. In both cases, the investor has more shares than before the split or dividend, but at the same to be cost. The investor's accounting for a stock split is the same as for a stock dividend of the same class of stock. Only a memorandum entry is made to record the number of new shares received, and the cost (or carrying value) per share is recomputed.

A stock dividend is a proportional distribution of shares of the corporation's stock to its shareholders (investors). The investor neither receive assets form the corporation nor own more of the issuing corporation; they merely have more shares to represent the same prior proportional ownership. A stock split occurs when a corporation increases the number of issued shares of stock and reduces the par or stated value proportionally.

Example

Assume that Belay Company purchased 1, 000 shares of common stock, par Br. 5 of Chala Corporation at Br. 90 per share. Subsequently, Belay Company received a 50 percent common stock dividend. Belay later sold 200 of the common shares at Br. 75 per share. Belay's entries are as follows:

At the acquisition date:

Long-Term investment in common stock of Chala Corporation	90,000	
	Cash (Br. 90 x 1, 000)	90,000

At the date of stock dividend:

Memorandum entry only: Received 50% common stock dividend of 500 shares (1, 000 x 50%) from Chala Corporation, revised cost per share = Br.



90, 000 $(1, 000 + 500 = 1, 500) = \text{Br. } 60$

At the date of sale of 200 common shares:

Cash (200 x Br. 75) 15, 000

LT investment in common stock of Chala Corporation (200 x Br. 60)
12, 000

Gain on sales of investments (15, 000 - 12, 000)
3, 000

6.6.3 Stock warrants and stock rights

A stock warrant is a certificate issued by a corporation conveying to the owner rights to acquire additional shares of its common stock at a specified price in a specified time period.

- **Stock right** - the right to acquire additional shares
- **Stock warrant** - a certificate representing the stock rights

The warrant states the number of shares that the holder of the right may purchases and also the price at which they may be purchased.

Stock right have three important dates: (1) the date the right offering is announced, (2) the date as of which the certificates or rights are issued, and (3) the date the rights expire. From the date the right is announced until it is issued, the share of stock and the right are not separable, and the share is described as rights-on; after the certificate or right is received and up to the time it expires, the share and right can be sold separately.

Accounting for stock warrants Acquired for Cash

The accounting problems involved when an investor acquires warrants in the open market are similar to those relating to the acquisition of any security. The acquisition price, plus brokerage fees and other acquisition costs, is debited to investments in stock warrants, and cash is credited. When warrants are acquired in conjunction with the acquisition of other securities, the total cost must be allocated to the various securities included in the package, based on relative market values.

When the warrants are used to acquire common stocks the initial cost of the warrants used plus the cash paid is the cost of the stock. The investments in common stock ledger account is debited; cash and investment in stock warrants are credited. If the market price of the common stock differs from this combined cost, this fact is disregarded until the stock is sold, at which time a gain or loss is recognized.

Accounting for stock warrants Acquired from Issuer

Stock warrants for rights are distributed to the stockholders of a corporation in proportion to their holdings of common stock. The receipt of stock warrants for rights may be compared with the receipt of a stock dividend. The issuer distributes no assets; instead, a method has been provided for an additional investment by the present stockholders. Until the stockholders elect to exercise or sell their warrants, their investment in the corporation is represented by (1) shares of common stock that have been acquired, and (2) stock warrants for rights to acquire additional shares of common stock at a price below the current market price. The cost of the original common stock investment consists now of the cost of the original investment is apportioned between these two parts of the investment on the basis of relative market values. The common stock will trade in the market on a "rights-on" basis until the ex-rights date, at which time the stock sells "ex-rights" and the stock warrants have a market of their own. Relative market

value allocation may be used to apportion the cost between the common stock and the stock warrants as follows:

$$\begin{array}{l} \text{Cost assigned} \\ \text{To stock} \\ \text{warrants} \end{array} \left\{ \begin{array}{l} \text{Cost of original investment in} \\ \text{common stock} \\ \text{plus} \\ \text{market value of stock rights} \\ \text{less} \\ \text{market value of stock rights} \end{array} \right. = \text{X}$$

Illustration

2. G.G Company purchased 500 shares J.J. Corporation common stock at Br. 93 per share.
3. Later in the year of purchase, G.G. Company receives 500 stock rights that entitle it to acquire 100 shares of J.J. Corporation common stock at a price of Br. 100 shares of J.J. Corporation common stock at a price of Br. 100 per share. Each stock right conveys to purchase one-fifth (1/5) of a share of J.J. Corporation common stock. At the date J.J. Corporation first trades ex-rights, it has a market price of Br. 120 per share, and each stock right has a market value of Br. 4.
4. Later G.G. exercised 400 rights and acquired 80 shares (400 x 1/5) of J.J. Corporation at the price of Br. 100 per share and sold the remaining 100 rights for Br. 4.50 per right.

Required

Prepare Journal entries to record the above transactions and information

Solution

- | | |
|---|--------------------|
| (1) Investment in J.J. Corporation common stock | 46, 500 |
| Cash (Br. 93 x 500) | 46, 500 |
| | |
| (2) Total market value of common shares held: (500 x Br. 120) = Br. 60, 000 | |
| Total market value of stock rights held: (500 x Br. 4) <u>2, 000</u> | |
| Total market value of investment | Br. <u>62, 000</u> |

$$\text{* Cost to be allocated to} = \text{Br. 46, 500} \times \frac{\text{Br. 2,000}}{\text{Br. 62,000}} = \text{Br. 1, 500}$$

investments in stock rights

$$\text{* Cost to be allocated to} = \text{Br. 46, 500} \times \frac{\text{Br. 60,000}}{\text{Br. 62,000}} = \text{Br. 45, 000}$$

investments in common shares

$$\text{So, the cost per share of common stock now} = \frac{\text{Br. 45,000}}{500} = \text{Br. 90}$$

$$\text{Cost per rights} = \frac{\text{Br. 1,500}}{500} = \text{Br. 3}$$

Journal entry to record acquisition of stock rights:

Investment in J.J. Corporation stock rights	1, 500
Investment in J.J. Corporation common stock	1, 500

(3) (i) To record the acquisition of 80 shares through exercising the rights:

Investment in J.J. Corporation stock rights (400 x Br. 3)	1, 200
Cash (80 x Br. 100)	

(ii) To record the sale of the 100 stock rights

Cash (100 x Br. 4.50)	
Investment in J.J. Corporation stock rights 9100 x Br. 3)	300
Gain on sale of stock right (450 - 300)	150

6.6.4 Convertible Securities

An investor may invest in bonds or preferred stock that are convertible to the common stock of the investee at the option of the investor. The characteristics of convertible securities are discussed in the next unit. At this point, we consider the action to be taken by investors who exercise the conversion option (feature) and receive common stock in exchange for convertible bonds or convertible preferred stock.

The market value of the common stock received may differ materially from the carrying amount of the converted securities. Two methods (approaches) are used to account for the converted securities. These are:

- (1) Carrying amount (book value) method - The carrying amount of the convertible securities is assigned to the common stock acquired in exchange. Thus, no gain or loss is recorded at the time of conversion.
 - (2) Market value method - The common stock acquired in exchange for convertible securities is recorded at the market value with the gain or loss to be recorded at the time of conversion.
- The first method is more acceptable than the second method

Example

Convertible bonds of BESA Company with carrying amount of Br. 155, 000 are converted to common stock with a current market value of Br. 180, 000. The Journal entry to record the conversion is as follows:

(1) Carrying amount method		
Investment in BESA Company common stock	155, 000	
Investment in BESA Company convertible bonds		155, 000
(2) Market value method		
Investment in BESA Company common stock	180, 000	
Investment in BESA Company convertible bonds		155, 000
Unrealized gain on conversion of bonds (180, 000 - 155, 000)		25, 000

Check Your Progress -5

- i. Which method is (are) unacceptable to establish cost of securities sold for income tax purposes?

_____.

- ii. From an investor's point of view, is there any significant difference between a stock dividend and a stock split? Does either represents revenue to an investor?

_____.

- iii. What are stocks warrants for rights?

_____.

6.7 LONG-TERM RECEIVABLES

Receivables not collectible during the next year or operating cycle, whichever is longer, are excluded from current assets and may be reported with other long-term investments in the balance sheet. Among such receivables are long-term notes and installment contracts receivable and notes receivables from officers, employees, or affiliated companies not collectible in the next year or operating cycle. The current portion of installment contracts receivable and other notes receivable collectible in installments is reported with other current assets in the balance sheet.

6.7.2 Investments in special-purpose funds

Companies sometimes set aside cash or other assets in special-purpose funds for a particular future use. These assets are commonly non current assets and directly related to current operations. They are reported on the balance sheet under the non-current heading classification investments and funds.

Funds may be set aside (1) by contract, as in the case of bond sinking fund; (2) by law, as in the case of rent deposits; or (3) Voluntarily, as in the case of a plant expansion fund. Examples of long-term special-purpose funds are

- Funds set aside to retire a specific long-term liability, such as a bond, a mortgage payable or long-term notes payable
- Funds set aside to reacquire shares of the company's outstanding stock.
- Funds set aside to purchase major assets, such as land or buildings.

There are two methods of handling these funds:

- (1) The fund may be established and operated internally
- (2) The assets may be deposited with a trustee (a bank, for example) who receives deposits, invests cash, collects revenue, pays expenses, and renders an appropriate accounting to the responsible officials.

Typically, funds that are created voluntarily are operated internally, where as those created by contract are handled by a trustee.

Bond sinking funds usually are included under long-term investments, and bonds outstanding are shown as a long-term liability. The sinking fund should not be offset against the bond liability. A sinking fund and other similar funds usually are included in the balance sheet as an asset even though they are held by trustees.

One of the most common methods of accumulating a sinking fund is to deposit fixed amounts at periodic intervals. The periodic deposit is computed by use of an amount of annuity formula.

6.7.3 Cash Surrender Value of Life Insurance Policies

Often a firm insures the lives of its top executives, with the firm as the beneficiary. There are three types of life insurance policies a firm might acquire on the lives of its executives:

- (1) Ordinary or whole-life

(2)Limited payment

(3)Term insurance

Only whole-life and limited-payment insurance policies build up value while the policy is in force. They have stipulated loan values and cash surrender values.

The cash surrender value (CSV) of a policy is the amount that would be refunded should the policy be terminated at the request of the insured. This value increases over time as the firm pays the insurance premium. The CSV is a form of investment usually reported on the balance sheet under investments and funds as a long-term asset.

Each policy provides a schedule that indicates the cash surrender value and the loan value for each policy year. Because a portion of the premiums paid is refundable in the form of the cash surrender value, only a portion of the periodic premiums is expensed. The firm's life insurance expense each period is the excess of the premium paid over the increase in the cash surrender value for the period.

Illustration

Zena Corporation purchased a Br. 100, 000 whole-life policy on its top executive several years ago. The following data represent the first five-year's experienced of Zena Company;

<u>Year</u>	<u>Premium</u>	<u>Cash Surrender Value</u>
1999	Br. 2, 200	0
2000	2, 200	0
2001	2, 200	Br. 500
2002	2, 200	1, 500
2003	2, 200	2, 600

The Journal entries for 2001 and 2002 are as follows:

2001

Life insurance expense (2, 200 - 500)	1, 700
Cash surrender value of life insurance	500
Cash	2, 200

2002

* The cash surrender value was increased by Br. 1, 000 (1, 500 - 500)

Life insurance expense (2, 200 - 1, 000)	1, 200
Cash surrender value of life insurance	1, 000
Cash	2, 200

Assume that the insured executive died on April 1, 2002, after the premium has been paid and recorded in the preceding entry. Most policies refund any premiums paid beyond the life of the insured. Assuming that the policy anniversary date is January 1, the refund in this case is Br. 2, 200 x (9/12), or Br. 1, 650. The insurance company pays Zena Corporation the face amount of the policy (Br. 100, 000) plus the refund amount (Br. 1, 650). Zena Corporation had recognized insurance expense of Br. 1, 200 for 2002. With the policy in effect only three months before the insured died, the expense recovery is for three-fourths of the year, or (9/12), which is $\frac{3}{12} \times$ Br. 1, 200 (Br. 900). A portion of the Br. 100, 000 is recorded as the payment of the cash surrender value, and the remainder is a gain:

Cash (Br. 100, 000 + Br. 1, 650)	101, 650
Life insurance expense	900
Cash surrender value of life insurance	1, 500
Gain on settlement of life insurance indemnity	99, 250

Check Your Progress -6

1. What is the cash surrender value of an insurance policy on the life of an officer of a business enterprise included as a long-term investment in the balance sheet of the enterprise?

6.8 SUMMARY

The Investments section of a balance sheet can comprise many different items. The major stock and debt securities and their accounting treatment are summarized below:

<u>Security</u>	<u>Method</u>
<u>Current Assets</u>	
Marketable equity securities	Lower of cost or market
Marketable securities	Lower of cost or market
Non-marketable securities	Cost

Non-current Assets

- | | |
|--|-------------------------|
| - Investment in common stock in excess of 20% voting equity interest with significant influence over investee's management | Equity |
| - Investment in less than 20% voting equity interest in the form of marketable equity securities | Lower of cost or market |
| - Non marketable equity securities | Cost |
| - Marketable or non-marketable debt securities | Cost |

If the market rate of interest is below the bond's stated rate, the bond will sell at a premium, where as if the market rate is higher than the bond's slated rate, the bond will sell at a discount. The two widely used methods of amortizing bond premium and accumulating bond discount are the straight-line method and the effective interest method. The investor who receives rights to purchase additional shares may (1) exercise the rights by

purchasing additional stock, (2) sell the rights, or (3) permit them to expire without selling or using them. When the company is the beneficiary and has the right to cancel a life insurance policy at its own option, the policy's cash surrender value is an asset of the company. The difference between the premium paid and the increase in the cash surrender value represents an expense to the company.

6.9 ANSWERS TO CHECK YOUR PROGRESS

1. I. Investments that are readily marketable and that may be sold without disturbing business relationships or affecting the operations of the business are current assets while investments made to create business relationships with other enterprise are long-term investments

II. The objectives of long-term investments

- to create close ties to major suppliers or retail outlets
- to gain control over competitor
- to enhance income
- to diversify the business risk

III. When an investor owns only a small portion (for example, less than 20%) of the total outstanding common stock of an investee so that the investor has little or no influence over the investee.

IV. The dividend received from investee earnings before acquisition of the common stock.

2. i. A

ii. The second entry is incorrect. The correct entry is

Cash	2,000	
Investment in investee common stock		2,000

The effect of this error on the balance sheet is to overstate the investment in investee common stock by Br. 2, 000 and to overstate total assets by the same amount.

3. It is an account used to close the amount investment income not paid as dividends by the investee.
4. Interest method – the interest revenue is computed for each interest period by multiplying the balance of the investment by the effective interest rate at the time the investment was made and the discount accumulated and the premium amortized is the difference between the interest revenue computed by effective rate of interest and periodic cash receipt.

Straight-line method – The discount or premium is spread uniformly over the term of the bonds and the periodic interest revenue is periodic cash receipt minus discount accumulated or plus premium amortized.

5. (i) LIFO and weighted-average methods
(ii) Certificates issued by a corporation conveying to the owner rights to acquire shares of its common stock at a specified price in a specified time period.
6. The savings part of a life insurance policy.

6.10 MODEL EXAMINATION QUESTION

I. True or False Questions

1. At the date of sale of a particular marketable equity security, the difference between the net proceeds from the sale of the security and its cost is recognized as a realized gain or loss without regard to any previously recognized unrealized gains or losses
2. Investment in bonds should be recorded on the date of acquisition at maturity value.

3. Under of the equity method in accounting for long-term stock investments requires consolidating a portion of the investees equity in the investor's financial statements.
4. From the date stock rights are issued until the date they expire, shares of stock of the issuing corporation are said to sell rights-on
5. Shares of stock received as a result of a stock dividend represent income to the recipient, where as shares received as a result of stock split do not constitute income to the recipients.

II. Multiple Choice Questions

1. Use of the effective interest method in amortizing bond premiums and discounts results in:
 - A. a greater amount of interest income over the life of the bond issue than would result from use of the straight-line method.
 - B. A varying amount being recorded as interest income from period to period.
 - C. A variable rate of return on the book value of the investment
 - D. A smaller amount of interest income over the life of the bond issue than would result from use of the straight-line method.
2. On Hamle 3, 1994, Abera Company purchased 22% of ZebergaCorporaiton's common stock for Br. 250, 000. Shortly after the purchase, Abera Company executives try to obtain representation on ZebergaCorporaiton's board of directors and tail. During 1994/1995-budget year, Zeberga reported net income of Br. 150, 000 and paid cash dividends of Br. 80, 000 on the common stock. The balance in Abera Company's investments in Zeberga Corporation account on Sene 30, 1995, should be
 - A. Br. 265, 400
 - B. Br. 234, 600
 - C. Br. 250, 000
 - D. Br. 300, 000
 - E. None

3. Chaltu Company owns 50 shares of the outstanding common stock of Belaynesh Company, which has several thousand shares publicly traded. These 50 shares were purchased by Chaltu in 2001 for Br. 100 per share. On August 30, 2003, Belaynesh distributed 50 stock rights to Chaltu. Chaltu was entitled to buy one new share of Belaynesh common stock for Br. 90 cash and two stock rights. On August 30, 2003 each share of stock had a market value of Br. 132, ex-rights, and each right had a market value of Br. 18. What is the cost basis of each new share that Chaltu acquires by exercising the rights?
- A. Br. 90 B. Br. 114 C. Br. 132 D. Br. 150 E. None
4. The accumulated balance of the valuation allowance for a long-term marketable equity securities port flow is a component of:
- A. Current assets D. Net income
B. Non-current assets E. None of the forgoing
C. Non-current liabilities
5. Nile Corporation declares and distributes a cash dividend that is a result of current earnings. How will the receipt of those dividends affect the investment account of the investor under each of the following accounting methods?

<u>Cost Method</u>	<u>Equity Method</u>	
A	No effect	Decrease
B	Increase	Decrease
C	No effect	No effect
D	Decrease	No effect

III. Exercises

Exercise 1

GIBE Corporation purchased 180,000 shares of AWASH Corporation 600,000 shares of outstanding common stock for Br. 1,620,000, on January 1, 2003. The book value of AWASH Corporation's net worth was Br. 500,000 on the date of the purchase. The excess of the purchase price of GIBE's investment over the book value is attributable to depreciable assets under valued on AWASH's books by Br. 400,000. The under valued assets have a remaining life of 6 years. For the year 2003 AWASH reported operating net income of Br. 850,000 and an extraordinary gain of Br. 80,000. Dividends paid by AWASH during the year amounted to Br. 300,000. Determine the carrying value of the investment at December 31, 2003, assuming that the foregoing events have been correctly recorded using the equity method of accounting for long-term investments.

Exercise 2

On January 3, 2003, Elizabeth Corporation bought 5,250 shares of Salad Company common stock for Br. 15 per share. At the time of the purchase Salad Company had total assets of Br. 270,000, liabilities of Br. 30,000, common stock (Br. 12 per share) of Br. 180,000, and retained earnings of Br. 60,000. The difference between book value acquired and the purchase price is attributable to assets having a remaining life of 5 years.

At the end of 2003, Salad Company reported net income of Br. 28,000 and paid cash dividends of Br. 9,000 on December 31, 2003. The market value of Salad stock on December 31, 2003 was Br. 16 per share.

Required:

- A. Prepare Journal entries for these transactions using the lower of cost or market method.
- B. Prepare Journal entries for these transactions using the equity method
- C. What amount of gain or loss would Elizabeth Corporation report if 1,000 shares of Salad Corporation were sold at Br. 16 per share on January 2, 2004? (Assume equity method)

Exercise 3

On July 1, 2003, LION Company acquired 500 of the Br. 1, 000 face amount, 14% bonds of ZEBRA Company for Br. 460, 481, at a yield rate of 16% year. The bonds, which mature on January 1, year 15, pay interest semiannually on January 1 and July 1. LION recorded the bonds at a long-term investment and adopted the interest method for accumulating the discount on the bonds. Computer the carrying amount, rounded to the nearest Birr, of the ZEBRA Company 14% bonds in LION Company's balance sheet on December 31, 2003.

Exercise 4

Prepare Journal entries for NYALA Company to record the following transaction for long-term investments.

Feb. 10. NYALA acquired 1, 000 shares of TIGER Company common stock at Br. 88 a share.

Mar. 31. TIGER issued a 10% stock dividend to common stock holders

June 30. TIGER issued stock warrants for rights to common stock holders, enabling the acquisition of one additional share of TIGER Common stock at Br. 90 for every five shares held. TIGER common stock was trading ex-rights at Br. 114 a share, and the rights had a market value of Br. 6 each.

July 18. NYALA exercised 1, 000 rights to acquire new shares of TIGER common stock

20. NYALA sold the remaining stock warrants for 100 rights for Br. 6.50 each.

Oct. 12. NYALA sold 400 shares of TIGER common stock for Br. 48, 000. The shares sold were specifically identified as being from those acquired on Feb. 10

Exercise 5

During your examination of the financial statements of BEKA Company, which has never before been audited, you discover that the cash surrender

value of a Br. 250, 000 life insurance policy on the president for which BEKA was the beneficiary, had not been entered in the accounting records. The president stated that the total premium on the policy was debited to the insurance expense ledger account each year because BEKA had no intention to “Cash in” the policy or to use the cash surrender value as collateral for a loan from the insurance company or a bank. Therefore, asserted the president, it would be misleading for BEKA to record as an asset an amount never expected to be realized or used by BEKA.

Required:

Evaluate the position of the president of BEKA Company.

6.11 GLOSSARY

1. Cash surrender value of life insurance: The saving part of a life insurance policy.
2. Convertible securities: Securities that can be converted at some specified future date into other securities.
3. Cost method: a method of accounting for long-term investment by which the investor recognizes as income its share of cash dividends of the investee.
4. Discount: excess of par value of stock over its sales price.
5. Equity method: a method of accounting for long-term investments, in which the investment is first recorded at its acquisition cost. However, the investment account is adjusted to reflect the proportionate increase or decrease in the investee's stockholders' equity that results from the investee's net income or loss for the period and declaration of dividends.
6. Long-term investment: assets that include holdings in securities (stocks and bonds) not classified as current, and in some circumstances, investment in certain subsidiaries that have not been consolidated with the parent firm.

7. Premium: excess of the sales price of stock over its par amount.
8. Stock dividend: a distribution to current shareholders (on a proportional basis) of the corporation's own stock.
9. Stock split: an increase in the number of outstanding shares, with a proportionally decreasing par or stated value.
10. Stock warrant: a certificate issued by a corporation conveying to the owner rights to acquire shares of its common stock at a specified price in a specified time period.

UNIT 7: LONG-TERM DEBT

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7.0 AIMS AND OBJECTIVES

This chapter aims at discussing different types of long-term liabilities and their accounting treatment.

After you have studied this chapter, you will:

- be familiar with long-term liabilities and how to value them for financial reporting purposes.
- understand the nature of bonds and how to compute the price of a bond at issuance.
- know accounting issues underlying Term bonds.
- know accounting issues surrounding issuance of serial bonds.
- be familiar with the different ways long-term debt is extinguished.

7.1 INTRODUCTION

Liabilities that do not require the payment of cash, the shipment of goods, or the rendering of services in one year (or the next operating cycle, whichever is longer) for their liquidation are designated long-term liabilities or long-term debt. Examples of long-term debt are: bonds, mortgage notes, promisory notes, deposits received for utilities service, some obligations

under pension and deferred compensation plans, certain types of lease obligations, deferred income tax credits, and some deferred revenue items.

Long-term debt may be collateralized (secured) by liens on business property of various kinds, for example, equipment (equipment notes), real property (mortgages), or securities (collateral trust bonds). Many companies issue debenture bonds that are backed only by the general credit standing of the issuer, and some companies have issued commodity backed bonds that are redeemable at prices linked to the prices of specified products such as gold and silver. The title of a long-term debt obligation, such as First Mortgage Bonds payable, may indicate the nature of collateral for the debt. Bonds may be issued that pay not interest (Zero - Conpon bonds) or that pay an exceptionally low rate of interest (deep-discount bonds).

7.2 TYPES OF BONDS

Bonds are means of dividing long-term debt in to a number of small units. By dividing the debt into a smaller unit, amounts of money larger than which could be borrowed from a single source may be obtained from a large number of investors. There are different types of bonds. Let us see some of them.

1. Secured and Unsecured Bonds - Mortgage bonds are secured by a claim on real estate. Collateral trust bonds are secured by stocks and bonds of other corporations. A debenture bond is unsecured. A "Junk bond" (high-risk bonds issued by companies with a weak financial position) is unsecured and pays a high interest rate. These bonds are often used to finance leveraged buyouts.
2. Term, serial Bonds and callable Bonds - Bond issues that mature on a single date are called term bonds, and issues that mature in

installments are called serial bonds. Serially maturing bonds are frequently used by school or sanitary districts, municipalities, or other local taxing bodies that borrow money through a special levy. Callable Bonds give the issuer the right to call and retire the bonds prior to maturity.

3. Convertible, commodity - Backed, and deep discount bonds. If bonds are convertible into other securities of the corporation for a specified time after issuance, they are called convertible bonds. Commodity - backed bonds (also called "asset linked bonds) are redeemable in measures of a commodity, such as barrels of oil, tons of coal. Deep discount bonds are bonds that pay exceptionally low rate of interest. They are sold at a discount that provides the buyer's total interest pay off at maturity.
4. Registered and Bearer (coupon) Bonds - Bonds issued in the name of the owner are registered bonds and require surrender of the certificate and issuance of a new certificate to complete a sale. A bearer or coupon bond, however, is not recorded in the name of the owner and may be transferred from one owner to another by mere delivery.
5. Income and Revenue Bonds - Income bonds pay no interest unless the issuing company is profitable. Revenue bonds, so called because the interest on them is paid from specified revenue sources, are most frequently issued by airports, school districts, countries, toll- road authorities, and government bodies.

7.3 ACCOUNTING FOR ISSUANCE OF BONDS AND INTEREST EXPENSE

7.3.1. Issuance of Term Bonds

In a typical term bond contract, the issuer promises two essentially different kinds of future payments (1) the payment of a fixed amount (face amount or principal) on a specified date; and (2) the periodic payment of interest,

usually at six-month intervals, in an amount expressed as a percentage of the face amount of the bonds.

If the effective interest rate is identical to the nominal rate, the bonds will sell at face amount. If the effective interest rate is higher than the nominal rate, the bonds will sell at a discount. (Zero-coupon bonds pay no interest and thus are issued at a deep discount) conversely, if the effective interest is less than the nominal rate, the bonds will sell at a premium. Differences between the nominal rate and the yield rate thus are adjusted by changes in the price at which the bonds are issued.

7.3.1.1. Bond Discount and Premium in the Balance Sheet

At the time of issue, the carrying amount of bonds payable is equal to the proceeds received, because these proceeds are computed as the present value of all future payments at the yield rate set by the money market. Bond discount and bond premium are valuation amounts relating to bonds payable. The discount or premium should be reported in the balance sheet as a direct addition to or deduction from the face amount of the bond. It should not be classified a deferred charge or deferred credit.

Bonds are presented in balance sheet as follows:

Bonds issued at a discount

Long-term debt:

Bond payable (face amount)..... xx
amount).... xx

Less: discount (xx)
xx

Carrying amount xx
xx

Bonds issued at a premium

Long-term debt:

Bond payable (face

Add: Premium

Carrying amount

7.3.1.2 Term Bond Interest Expense

Because differences between the effective rate and the nominal rate of interest are reflected in bond prices, the amount of premium or discount affects the periodic interest expense of the issuer. If bonds are issued at a yield rate greater than the nominal rate, the discount represents an additional amount of interest that will be paid by the issuer at maturity. Similarly if the bonds are issued at a yield rate less than the nominal rate, the premium represents an advance paid by bond holders for the right to receive larger annual interest checks and is viewed as a reduction in the effective interest expense. The premium in effect is returned to bond holders in the form of larger periodic interest payments.

The present value of the bonds on the date of issuance differs from their face amount because the market rate of interest differs from the periodic interest payments provided for in the bond contract. Therefore, the process of amortizing the bond discount or premium in conjunction with the computation of periodic interest expense is a means of recording the change in the carrying amount of the bonds as they approach maturity. In the bond discount case, the increase in the carrying amount of the bonds is caused by the decrease in bond discount through amortization. Similarly, in the bond premium case, the decrease in the carrying amount of the bonds is caused by the decrease in bond premium through amortization.

7.3.1.3 Interest Method of Amortization for Term Bonds

In this method, the bond interest expense in each accounting period is equal to the effective interest expense, i.e., the effective rate of interest applied to the carrying amount of the bonds at the beginning of the period. It is theoretically sound and an acceptable method.

Under this method;

- (1) Bond interest expense is computed first by multiplying the carrying value of the bonds at the beginning of period by the effective interest rate.
- (2) The bond discount or premium amortization is then determined by comparing the bond interest expense with the interest to be paid.

The Computation of the amortization is as follows:

$$\begin{array}{c} \text{Bond Interest} \\ \text{Carrying value} \\ \text{of Bonds at} \\ \text{Beginning} \\ \text{of period} \end{array} \times \begin{array}{c} \text{Effective} \\ \text{Interest} \\ \text{rate} \end{array} - \begin{array}{c} \text{Bond Interest paid} \\ \text{Face} \\ \text{amount} \\ \text{of} \\ \text{bonds} \end{array} \times \begin{array}{c} \text{Stated} \\ \text{Interest} \\ \text{rate} \end{array} = \text{Amortization Amount}$$

7.3.1.4 Straight- Line Method of Amortization

Under this method the additional interest expense (discount) or reduction of interest expense (premium) may be allocated evenly over the term of the bonds. It results in a uniform periodic interest expense. The use of straight-line method is acceptable if it is applied to immaterial amounts of discount or premium.

Illustration

Assume that Br. 5000,000 of five-year, 10% term bonds are authorized and issued by a corporation. Assume also that the effective (yield) rate of interest for such types of bonds is:

- Case 1. 12%
- Case 2. 8%

Required

1. Compute the amount of annual interest.
2. Compute the amount of proceeds from bonds under case 1.
3. Compute the amount of discount on bonds under case 1.

4. Present the journal entry to record the issuance of the bonds under case 1.
5. Compute the amount of proceeds and premium on bonds under case 2.
6. Present the journal entry to record the issuance of the bonds under case 2.
7. Compute the amount of effective interest expense over the term of the bonds under case 1.
8. Compute the amount of effective interest expense over the term of the bonds under case 2.
9. Prepare discount amortization table under case 1 using interest method.
10. Present journal entries to record the first two annual interest payments under case 1 using interest method.
11. Prepare premium amortization table under case 2 using interest methods.
12. Present journal entries to record the first two annual interest payments under case 2 using interest method.
13. Prepare discount amortization table under case 1 using straight-line method.
14. Present journal entries to record the first two annual interest payment under case 1 using straight-line method.
15. Prepare premium amortization table under case 2 using straight-line method.
16. Present journal entries to record the first two annual interest payment under case 2 using straight - line method.

Solution

1. Amount of annual interest

$$= 0.10 \times \text{Br. } 5000,000 = \text{Br. } 500,000$$
2. Amount of proceeds under case 1 (12%)
 Present value of Br. 500,000 due in 5 years at 12%

$$(\text{Br. } 5000,000 \times 0.56743) \qquad \qquad \text{Br. } 2,837,150$$

Present value of ordinary annuity of Br. 500,000 interest
every year for 5 years at 12% (Br. 500,000 x 3.60478) 1,802,390

Proceeds of bond issue Br. 4,639,540

3. Amount of discount under case 1 (12%)

Face value of bonds Br. 5000,000

Present value of bonds 4,639,540

Discount on bonds Br. 360,460

4. Journal entry to record issuance of bonds under case 1

Cash 4,639,540

Discount on Bonds payable 360,460

Bonds payable 5000,000

5. Amount of proceeds under case 2 (8%)

Present value of Br. 5000,000 due in 5 years at 8% (Br. 5000,000 x 0.68068)
Br. 3,402,900

Present value of ordinary annuity of Br. 500,000 interest

Payable every year for 5 years at 8% (Br. 500,000 x 3.99271)

1,996,355

Proceeds of bond issue Br. 5,399,255

Amount of premium on bonds = Br. 5399,255 - Br. 5000,000 =
Br. 399,255

6. Journal entry to record issuance under case 1

Cash 5,399,255

Bonds payable 5000,000

Premium on Bonds payable 399,255

7. Amount of effective interest expense over the term of the bond under
case 1

Nominal interest (Br. 500,000 x 5) Br. 2,500,000

Add: discount 360,460

Five year interest expense Br. 2,860,460

8. Amount of effective interest expense over the term of bonds under
case 2

Nominal interest (Br. 500,000 x 5)	Br. 2,500,000
Less: Premium	<u>399,255</u>
Five-year interest expense	Br. <u>2,100,754</u>

9. Discount amortization table under case 1 using interest method

Time	Interest paid (10%)	Effective interest Expense (8%)	Premium amortizat ion	Bond premium balance	Carrying amount of bonds issue
	-	-	-	Br. 360,460	Br. 4,639,540
End of year 1	Br. 500,000	Br. 556,745	Br. 56,745	303,715	4,696,285
End of year 2	500,000	563,554	63,554	240,161	4,759,839
End of year 3	500,000	571,181	71,181	168,980	4,831,020
End of year 4	500,000	579,722	79,722	89,258	4,910,742
End of year 5	500,000	589,289	89,258*	-	5,000,000

* Result of rounding up of some amounts.

10. Journal entries to record the first two annual interest payments under case 1 using interest method.

End of year 1:	Bond interest Expense	Br. 556,745
	Cash	500,000
	Discount on bonds payable	63,554
End of year 2:	Bond interest Expense	563,554
	Cash	500,000
	Discount on bonds payable	63,554

11. Premium amortization table under case 2 using interest method

Time	Interest paid (10%)	Effective interest Expense (8%)	Premium amortizat ion	Bond premium balance	Carrying amount of bonds
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Issue	-	-	-	Br. 399,255	Br. 5,399,255
End of year 1	Br. 500,000	Br. 431,940	Br. 68,060	331,195	5,331,195
End of year 2	500,000	426,496	73,504	257,691	5,257,691
End of year 3	500,000	420,615	79,385	178,306	5,178,306
End of year 4	500,000	414,264	85,736	92,570	5,092,570
End of year 5	500,000	407,406	92,570*	-	5,000,000

* Result of rounding up of some amounts.

12. Journal entries to record the first two annual interest payments under case 2 using interest method.

End of year 1: Bond interest Expense	431,940
Premium on Bonds payable	68,060
Cash	500,000
End of year 2: Bond interest Expense	426,496
Premium on Bonds payable	73,504
Cash	500,000

13. Discount amortization table under case 1 using straight-line method.

Time	Interest paid (10%)	Effective interest Expense (8%)	Premium amortizat ion	Bond premium balance	Carrying amount of bonds
Issue	-	-	-	Br.360, 460	Br. 4,639,540
End of year 1	Br. 500,000	Br. 72,092	Br. 572,092	288,368	4,711,632
End of year 2	500,000	72,092	572,092	216,276	4,783,724
End of year 3	500,000	72,092	572,092	144,184	4,855,816
End of year 4	500,000	72,092	572,092	72,092	4,927,908
End of year 5	500,000	72,092	572,092	-	5,000,000

14. Journal entries to record the first two annual interest payments under case 1 using straight - line method.

End of year 1: Bond Interest Expense	572,092
Cash	500,000
Discount on Bonds payable	72,092
End of year 2: Bond Interest Expense	572,092
Cash	500,000
Discount on Bonds payable	72,092

15. Premium amortization table under case 2 using straight - line method.

Time	Interest paid (10%)	Effective interest Expense (8%)	Premium amortizat ion	Bond premium balance	Carrying amount of bonds
Issue	-	-	-	Br. 399,255	Br.5, 399,255
End of year 1	Br. 500,000	Br. 79,851	Br.420, 149	319,404	5,319,404
End of year 2	500,000	79,851	420,149	239,553	5,239,553
End of year 3	500,000	79,851	420,149	159,702	5,159,702
End of year 4	500,000	79,851	420,149	79,851	5,079,851
End of year 5	500,000	79,851	420,149	-	5,000,000

16. Journal entries to record the 1st two interest payment under case 2 using straight-line method.

End of year 1: Bond interest expense	420,149
Premium on Bonds payable	79,851
Cash	500,000
End of year 2: Bond interest expense	420,149
Premium on Bonds payable	79,851
Cash	500,000

Check Your Progress - 1

- i. Bonds with a nominal rate of interest of 7% are issued to yield 8% will bond sell at a premium or a discount?
- ii. If bonds are issued at a premium and the interest method is used to amortize the premium, will the annual interest expense increase or decline over the term of the bonds?
- iii. Why is the interest method of amortization of premium or discount on bonds payable considered conceptually superior to the straight - line method?

7.3.1.5 Bond Issue Costs

The issuance of bonds involves engraving and printing costs, legal and accounting fees, commissions, promotion costs, and other similar charges. According to GAAP, these items should be debited to a deferred charge account for unamortized Bond Issue costs and amortized over the life the debt, in a manner similar to that used for discount on bonds. An alternative procedure advocated by some accountants (but which is not in accordance with generally accepted accounting principles) is to add bond issue costs to bond discount or deduct them from bond premium. This procedure implies that the amount of funds made available to the borrower is equal to the net proceeds of the bond issue after deduction of all costs of borrowing under this procedure, bond issue costs increase the interest expense during the term of the bonds.

Illustration (using the first alternative)

Cheru corporation sold Br. 20,000,000 of 10-year bonds for Br. 20,795,000 on January 1,2003. Costs of issuing the bonds were Br. 245,000.

The journal entries at January 1,2003 and December 31,2003 for issuance of the bonds and amortization of the bond issue costs would be as follows:

<u>Jan.1,2003</u> (issue of bonds)	
Cash (20,795,000 - 245000)	20,550,000
Unamortized bond issue costs	245,000

Bonds payable	20,000,000
Premium on bonds payable	795,000

Dec. 31, 2003 (amortization of bond issue costs)

Bond issue expense (245,000/10)	24,500
Unamortized Bond issue costs	24,500

7.3.1.6 Bonds Issued Between Interest Dates

Bonds are usually not issued on an interest date, and semiannual interest payments are more typical. Two new problems arise: accounting for accrued interest from the most recent interest payment date and computing the issue price.

Illustration

Information for Rashid bond issue:

- (1) The bond date is March 31, 2003, and maturity date is March 31, 2008.
- (2) The issue date is June 1, 2003 (between interest dates)
- (3) The bonds pay interest each September 30 and March 31.
- (4) The stated rate is 8 percent, and the effective interest rate is 10 percent. $i = 10/2\% = 5\%$, interest payment = $100,000 \times 0.04 = \text{Br. } 4000$.
- (5) Face value is Br. 100,000.

Price of the bond is calculated as follows:

Price of bond at immediately preceding interest date (31/3/2003):

Present value of Br. 100,000 at 5% for 10 periods (Br. $100,000 \times 0.61391$)
 Br. 61,391

Present value of ordinary annuity of 5 rents of

Br. 4000 interest payments at 5% (Br. 4000×7.72173)
30,187

Total present value	Br.
92,278	
Add: Growth in bond present value at yield rate, from	
31/3/03 to 01/06/03 (Br. 92,278 x 10% x 2/12)	1,538
deduct: cash interest at stated rate from 31/3/03 to 01/06/03 (Br. 100,000 x 8% 2/12) <u>(1,333)</u>	
price of bond at June 1,2003	Br.
<u>92,483</u>	

The journal entrey to record issue of bonds is;

Cash (Br. 92,483 + Br. 1333)	93,816
Discount on bonds payable (Br. 100,000 – Br. 92,483)	7,517
Interest payable	1333
Bonds payable	100,000

The journal entry to record the first semiannual interest on September 30,2003 is: (interest method)

Interest payable	1,333
Interest expense	3,076
Discount on bonds payable	409
Cash	4000

Computation:

Interest expense for four months based on the March 31 issue price:

= Br. 92,278 x 0.10 x 4/12 = Br. 3,076

Discount amortization (Br. 1333 + Br. 3076) – Br. 4000 = Br. 409

7.3.2. Issuance of Serial Bonds

Serial bond provides for payment of the principal in periodic installments. Serial bonds have the advantage of gearing the issuer's debt repayment to its periodic cash inflow from operations.

The proceeds of a serial bond issue are the present value of the series of principal payments plus the present value of the interest payments, all at the effective interest rate equals the proceeds received for the bonds.

At this point the question arises: is there any single interest rate applicable to a serial bond issue? We often refer loosely to the rate of interest, when in fact in the market at any one time there are several interest rates, depending on the terms, nature, and length of the bond contract offered.

In a specific serial bond issue, the term of all bonds in the issue are the same except for the differences in maturity. However, because short-term interest rates often differ from long-term rates, it is likely that each maturity will sell at a different yield rate, so that there will be a different discount or premium relating to each maturity.

In many cases, high degree of precision in accounting for serial bond issues is not possible because the yield rate for each maturity is not known. Underwriters may bid on an entire serial bond issue on the basis of an average yield rate and may not disclose the particular yield rate for each maturity that was used to determine the bid price. In this situation we may have to assume that the same yield rate applies to all maturities in the issue, and proceed accordingly.

If interest method is to be used in according for serial bond interest expense, the procedure is similar to the illustrated in connection with term bonds.

A variation of the straight-line method, known as the bonds outstanding method, results in a decreasing amount of premium or discount amortization each accounting period proportionate to the decrease in the amount of outstanding serial bonds.

Illustration

Assume that in early January, 2003, a company issued Br. 500,000 of ten-year, 10% serial bonds, to be repaid in the amount of Br. 50,000 each year. Assume that interest payments are made annually and that the bond issue costs were Br. 25000. As to the yield rate, assume the following two cases:

Case 1: 9%

Case 2: 11%

Required

1. Present the journal entry to record the bond issue cost.
2. Compute the proceeds received on the bonds under case 1.
3. Compute the amount of bond premium at the time of issuance under case 1.
4. Compute the proceeds received on the bonds under case 2.
5. Compute the amount of bond discount at the time of issuance under case 2.
6. Present the journal entry to record the issuance of the bonds under case 1.
7. Present the journal entry to record the issuance of the bonds under case 2.
8. Prepare premium amortization table for the serial bonds using the interest method.
9. Prepare premium amortization table for the serial bonds using the bonds outstanding method.
10. Prepare the discount amortization table for the serial bonds using the interest method.
11. Prepare discount amortization table for the serial bonds using the bonds outstanding method.
12. Present the journal entry for the amortization of the bond issue cost for 2003.
13. Present the journal entry to record the retirement of the first serial bond and the payment of the first interest.

- a) Under case 1 using the interest method
- b) Under case 1 using the bond outstanding method
- c) Under case 2 using the interest method
- d) Under case 2 using the bond outstanding method

Solution

1. To record bond issue costs

Unamortized bond issue costs	25,000
Cash	25,000

1. Proceeds under case 1

End of	Interest due (10% principal left)	Principal due	Total amount due	Discounting factor (9%)	Present value
2003	Br. 50,000	Br. 50,000	Br. 100,000	0.917	Br. 91,700
2004	45,000	50,000	95,000	0.842	79,990
2005	40,000	50,000	90,000	0.772	69,480
2006	35,000	50,000	85,000	0.708	60,180
2007	30,000	50,000	80,000	0.650	52,000
2008	25,000	50,000	75,000	0.596	44,700
2009	20,000	50,000	70,000	0.547	38,290
2010	15,000	50,000	65,000	0.502	32,630
2011	10,000	50,000	60,000	0.460	27,600
2012	<u>5,000</u>	<u>50,000</u>	<u>55,000</u>	<u>0.422</u>	<u>23,210</u>
Totals	<u>Br. 275,000</u>	<u>Br. 500,000</u>	<u>Br. 775,000</u>		<u>Br. 519,780</u>

→ Proceeds = Br. 519,780

2. Amount of bond premium at the time of issuance, case 1

Total proceeds	Br. 519,780
Face value	<u>500,000</u>
Premium	Br. <u>19,780</u>

3. Proceeds under case 2

End of	Total amount due	Discounting factor (9%)	Present value
2003	Br. 100,000	0.901	Br. 90,100
2004	95,000	0.812	77,140
2005	90,000	0.731	65,790
2006	85,000	0.659	56,015
2007	80,000	0.593	47,440
2008	75,000	0.535	40,125
2009	70,000	0.482	33,740
2010	65,000	0.434	28,210
2011	60,000	0.391	23,460
2012	<u>55,000</u>	0.352	<u>19,360</u>
Totals	Br. <u>775,000</u>		Br. <u>481,380</u>

Proceeds → Br. 481,380

5. Amount of discount, case 2

Face value Br. 500,000

Proceeds 481,380

Discount Br. 18,620

6. Journal entry to record issuance under case 1

Cash 519,780

 Bonds Payable 500,000

 Premium on bonds payable 19,780

7. Journal entry to record issuance under case 2

Cash 481,380

Discount on bonds payable 18,620

 Bonds payable 500,000

8 Premium amortization table (interest method)

Year	Carrying amount	Interest expense (9%)	Interest Payment (10%)	Premium Amortizati on	Bond Premium Balance	Cumulati ve principal Payment
Issue	Br. 519,780	-	-	-	Br. 19,780	-
2003	466,560	Br. 46,780	Br. 50,000	Br. 3,220	16,560	100,000
2004	413,550	41,990	45,000	3,010	13,550	100,000
2005	360,770	37,220	40,000	2,780	10,770	150,000
2006	308,239	32,469	35,000	2,531	8,239	200,000
2007	255,981	27,742	30,000	2,258	5,981	250,000
2008	204,019	23,038	25,000	1,962	4,019	300,000
2009	152,381	18,362	20,000	1,638	2,381	350,000
2010	101,095	13,714	15,000	1,286	1,095	400,000
2011	50,194	9,099	10,000	901	194*	450,000
2012	-	4,517	5000	483*	-	500,000

* Rounding up difference

9. Premium amortization table using bond outstanding method

Year	Bonds outstandin g balance	Fraction of total of bonds outstandin g	Premium amortizati on (Br. 19,780 x fraction)	Interest Payment	Interest expense
2003	Br. 500,000	500 /2.750	Br. 3,596	Br. 50,000	Br. 46,404
2004	450,000	450 /2.750	3.237	45,000	41,763
2005	400.000	400 /2.750	2,878	40,000	37,122
2006	350,000	350 /2.750	2.517	35,000	32,483

2007	300,000	300 /2.750	2,158	30,000	27,842
2008	250,000	250 /2.750	1,798	25,000	23,202
2009	200,000	200 /2.750	1,439	20,000	18,561
2010	150,000	150 /2.750	1,079	15,000	13,921
2011	100,000	100 /2.750	719	10,000	9,281
2012	<u>50,000</u>	<u>50 /2.750</u>	<u>360</u>	<u>5,000</u>	<u>4,640</u>
	<u>Br.</u>	<u>2750</u>	<u>Br. 19,780</u>	<u>Br.</u>	<u>Br.</u>
	<u>2,750,000</u>	<u>/2.750</u>		<u>275,000</u>	<u>255,220</u>

10. Discount amortization table using the interest method (case 2)

Year	Carrying amount	Interest expense (11%)	Interest Payment	Discount amortization	Bond discount Balance	Cumulative principal Payment
Issue	Br. 481,380	-	-	-	Br. 18,620	-
2003	434,332	Br. 52,952	Br. 50,000	Br. 2,952	15,668	Br. 50,000
2004	387,109	47,777	45,000	2,777	12,891	100,000
2005	339,691	42,582	40,000	2,582	10,309	150,000
2006	292,057	37,366	35,000	2,366	7,943	200,000
2007	244,183	32,126	30,000	2,126	5,817	250,000
2008	196,043	26,860	25,000	1,860	3,957	300,000
2009	147,608	21,565	20,000	1,565	2,392	350,000
2010	98,845	16,237	15,000	1,237	1,155	400,000
2011	49,718	10,873	10,000	873	282*	450,000
2012	-	5,469	5,000	496*	-	500,000

* Rounding up difference

11. Discount amortization table using the bonds outstanding method (case 2)

Year	Bonds outstanding	Fraction of total of bonds outstanding	Amortization of Discount (Br. 18.620 x fraction)	Interest Payment	Interest expense
2003	Br. 500,000	500 /2.750	Br. 3,385	Br. 50,000	Br. 53,385
2004	450,000	450 /2.750	3,047	45,000	48,047
2005	400,000	400 /2.750	2,708	40,000	42,708
2006	350,000	350 /2.750	2,370	35,000	37,370
2007	300,000	300 /2.750	2,031	30,000	32,031
2008	250,000	250 /2.750	1,693	25,000	26,693
2009	200,000	200 /2.750	1,354	20,000	21,354
2010	150,000	150 /2.750	1,016	15,000	16,016
2011	100,000	100 /2.750	677	10,000	10,677
2012	<u>50,000</u>	<u>50 /2.750</u>	<u>339</u>	<u>5,000</u>	<u>5,339</u>
	<u>Br. 2,750,000</u>	<u>2750 /2.750</u>	<u>Br. 18,620</u>	<u>Br. 275,000</u>	<u>Br. 293,620</u>

12. Journal entry for the amortization of the bond issue costs for 2003

Bond issue expense (Br. 2500 ÷ 10)	2,500
Unamortized bond issue costs	2,500

13. Journal entry to record the retirement of the 1st serial bond and the payment of the first interest (2003)

Case 1, interest method

Bonds payable	50,000
Premium on bonds payable	3,220

Bond interest expense	46,780
Cash	100,000

Case 1, Bonds outstanding method

Bonds payable	50,000
Premium on bonds payable	3,596
Bond interest expense	46,404
Cash	100,000

Case 2, Interest method

Bonds payable	50,000
Bonds interest expense	52,952
Discount on bonds payable	2,952
Cash	100,000

Case 2, Bonds outstanding method

Bonds payable	50,000
Bonds interest expense	53,385
Discount on Bonds payable	3,385
Cash	100,000

7.3.3. Bond Sinking Funds

Some bond indentures require that a sinking fund be established for the retirement of the bonds. Ordinarily, a sinking fund would not be created in connection with the issuance of serial bonds; such bonds are retired periodically in lieu of making sinking fund deposits. A disadvantage inherent in bond sinking fund is that a portion of money borrowed for planned business purposes is not being used in this manner if cash must be deposited periodically in a sinking fund.

Check Your Progress - 2

- i. How should the costs of issuing bonds be accounted for and classified in the financial statements
- ii. What is bonds outstanding method of amortizing premium or discount?

- iii. What is bond sinking fund?

7.4 EXTINGUISHMENTS OF LONG-TERM DEBT

Firms typically use the proceeds of long-term debt instruments for the entire debt term. At maturity all discount or premium is fully amortized; gains and losses are not recognized on normal retirement. Firms can, however, retire debt before maturity. Early retirement of debt decreases the debt-equity ratio and can facilitate future debt issuances.

A major incentive for retiring bonds before maturity is an increase in interest rates, which causes bond prices to decrease significantly below book value. The decline in price enables the issuer to require bonds at a gain. When interest rates drop, firms use the opportunity to retire more expensive bonds and issue bonds with lower interest rates. A loss occurs in this case because bond prices have increased above book value.

The issuer may retire the debt by exercising the call provision, by acquiring the bonds in the open market, in a debt-equity swap, in a refunding, or by means of an in-substance defeasance. These extinguishments of long-term debt are discussed in the following sections. Typically, a gain or loss (before income tax effect) on the extinguishments of term or serial bonds prior to maturity is recorded equal to the difference between the amount paid to retire the bonds and their carrying amount, including any amortized bond issue costs should be adjusted to the date of extinguishments before the journal entry to record the extinguishments is prepared.

7.4.1 Extinguishments by Calling Bonds

In an open-market purchase of bonds, the issuer pays the current market price as would any investor purchasing the bonds. If bonds carry a call privilege, the issuer may retire the debt by paying the call price during a specified period. The call price places a ceiling on the market price.

Investors who purchase callable are at a disadvantage if interest rates decline because they may have to surrender bonds that pay higher interest than non-callable bonds. In addition, the call price typically exceeds face value by the call premium, which can decline each year of the bond term.

Gains and losses on extinguishments of bonds reflect the changes in interest rates since the bonds were issued. Material gains and losses on the extinguishments of bonds are reported as extraordinary items in the income statement.

When an entire bond issue is called for redemption, the entire unamortized premium or discount and bond issue costs are written off. Losses generally result on such redemptions because the sliding call prices ordinarily are in excess of bond carrying amounts on corresponding call dates.

If bonds are called but not formally retired, a treasury bonds ledger account may be debited for the face amount of the treasury bonds held, but a gain or loss still should be recognized. The treasury bonds account is not an asset; it is deducted from bonds payable in the balance sheet. Interest is not paid on treasury bonds unless they are held as an investment by a company sponsored fund, such as an employee pension fund.

Illustration

Assume that a company issued Br. 1000, 000 of 10-year, 12% term bonds, with interest payable semiannually on April 1 and October 1 of each year. The bonds were issued on June 1, year 1, for Br. 1, 070, 800 plus accrued interest of April and May Br. 20, 000 ($\text{Br. } 1, 000, 000 \times 0.12 \times 2/12 = \text{Br. } 20, 000$) for two months. The bonds were dated April 1, year 1, and bond issue costs amounted to Br. 4, 720.

On December 1, year 2, Br. 400, 000 (40%) of the bonds were called which is 18 months after the bonds were issued. The bonds were redeemed at the

call price of 103 (103% of face amount) plus accrued interest of Br. 8, 000 (Br. 400, 000 x 0.12 x 2/12) for two months.

Required

Present the Journal entries to record the extinguishments of the term bond on December 1, year 2.

Solution

(1) December 1 year 2 (To record amortization)

Premium on Bonds payable	2, 640
Bond issue expense	176
Bond interest expense	2, 640
Un amortized bond issue costs	176

Computation

Amortization of bond premium (Straight-line method)

Face value	Br. 400, 000
Proceed (Br. 1, 070, 800 x 40%)	<u>428, 320</u>
Premium	Br. <u>28, 320</u>

Premium for the period from Jan. 1, year 2 to Dec. 1, year 2 (11 months) is:

$$\text{Br. 28, 320} \times \frac{11}{118} = \text{Br. 2, 640}$$

* 118 = (10 year x 12) - 2 months, since the bonds issued on June 1, year 1, amortization of bond issue costs:

$$= \text{Br. 4, 720} \times 0.40 \times 11/118 = \text{Br. 176}$$

(2) December 1, year 2 (To record extinguishments of the debt)

Bonds payable	400, 000
Premium on bonds payable	24, 000
Bond interest expense	8, 000
Cash	420, 000
Un amortized bond issue costs	1, 600

Gain on Extinguishments of bond 10, 400

Computation

Premium on bonds payable

Total on the retired bonds Br. 28, 320

Amortized for 18 months (Br. 28, 320 x 18/118) 4, 320

Balance un amortized Br. 24, 000

- Bond interest expense = Br. 400, 000 x 0.12 x 2/12
= Br. 8, 000

Bond issue costs = Br. 4, 720 x 0.40 x 100/118
= Br. 1, 600 (Bond issue costs for 18 months are already amortized)

Cash:

Br. 400, 000 x 1.03 = Br. 412, 000 (payment for the face value)

400, 000 x 0.12 x 2/12 = Br. 8, 000 Z(payment for accrued interest)

Total cash payment = Br. 412, 000 + Br. 8, 000
= Br. 420, 000

Gain on extinguishments:

Original issuance proceeds (Br. 1, 070, 800 x 0.4) Br. 428, 320

Less: original bond issue costs (Br. 4, 720 x 0.40) 1, 888

Subtotal Br. 426, 432

Amortization for 18 months:

Premium (Br. 28, 320 x 18/118) (Br. 4, 320)

Bond issue costs (Br. 4, 720 x 0.4 x 18/118) 228

Carrying amount less un amortized bond issue costs Br. 422, 400

Less: Amount paid to extinguish bonds 412, 000

Gain on extinguishments of bonds Br. 10, 400

We can also compute gain on extinguishments as follows:

Carrying amount = face amount plus un amortized premium

= Br. 400, 000 + (Gr. 28, 320 - Br. 4, 320)

= Br. 424, 000

Carrying amount-----Br. 424, 000

Paid to extinguish-----	<u>412, 000</u>
Br. 12, 000	
Less: Unamortized bond issue costs-----	- <u>1, 600</u>
Gain: -----	Br. <u>10, 400</u>

Check Your Progress -3

1. List the forms of extinguishments

_____.

2. How do we compute gain or loss when a call privilege is exercised? How do we report material gain or loss in the income statement?

7.4.2 Extinguishments through Open-Market Acquisition

If interest rates are rising and bond prices are falling, it may be appropriate for the issuer to realize a substantial gain by acquiring its bonds in the open market from present bondholders at a substantial discount.

Illustration

Assume that at the beginning of year 1 a company issued Br. 500, 000 of five, 5% serial bonds, to be repaid in the amount of Br. 100, 000 each year. The interest payments are made annually and that no bond issue costs were incurred. The bonds were issued to yield 6% a year for total proceeds of Br. 486, 875.

At the end of year 2, two years prior to the scheduled retirement date, Br. 50, 000 of the company's bonds are acquired at 85 (85% of face amount). The bond interest had been paid for year 2

Required

Present the Journal entry to record the extinguishments of the bonds at the end of year 2

Solution

Bonds payable	50, 000	
Discount on bonds payable		875
Cash (Br. 50, 000 x 0.85)		42, 500
Gain on Extinguishments of Bonds		6, 625

Computation

Discount on bonds payable using the bonds outstanding method. Total amount of discount:

Face value	Br. 500, 000
Proceeds	<u>486, 875</u>
Discount	Br. <u>13, 125</u>

Fraction of total bonds outstanding:

$$\text{For year 3} \text{-----} \frac{\text{Br. } 500,000 - \text{Br. } 200,000}{\text{Br. } 1,500,000} = 3/15$$

$$\text{For year 4} \text{-----} \frac{\text{Br. } 500,000 - \text{Br. } 300,000}{\text{Br. } 1,500,000} = 2/15$$

Br. 1, 500, 000 = Br. 500, 000 + Br. 400, 000 + Br. 300, 000 + Br. 200, 000 + Br. 100, 000

Discount applicable to:

$$\text{Year 3} = \text{Br. } 13, 125 \times 3/15 \times \frac{\text{Br. } 50,000}{\text{Br. } 300,000} = \text{Br. } 437.50$$

$$\text{Year 4} = \text{Br. } 13, 125 \times 2/15 \times \frac{\text{Br. } 50,000}{\text{Br. } 200,000} = \text{Br. } \underline{437.50}$$

Total discount applicable to acquired bonds Br. 875

Gain on extinguishments of bonds:

Face value of bonds acquired	Br. 50, 000
Discount applicable to acquired bonds	<u>875</u>
Carrying value of bonds acquired	Br. 49, 125
Payment to acquire the bonds (Br. 50, 000 x 0.85)	<u>42, 500</u>
Gain on extinguishments	Br. 6, 625

7.4.3 Extinguishments Through Refunding

Refunding is the process of retiring a bond issue with the proceeds of a new bond issue. One way of refunding is to issue new bonds in exchange for the old bonds. Cash is involved if the bond issues have different market values. More frequently, however, the proceeds from a new bond issue are used to retire the old issue because the holders of the old issue do not necessarily wish to become new creditors. In both cases, the accounting for refunding is similar to all forms of debt extinguishments.

1. Refunding by direct exchange of debt securities

Example

On January 1, 2000, Tulu Dimtu Corporation issues Br. 100, 000 of 10-year, 5 percent bonds at face value with interest payable each June 30 and December 31. On January 1, 2004, the bondholder agreed to exchange their bonds for Br. 90, 000 of 20-year, 8 percent bonds with the same interest dates as the 5 percent bonds. The market rate of interest on similar bonds is 8 percent.

Analysis:

- a. The bondholders receive 10 percent less principal but 60 percent more in the interest rate.
- b. Present value (market value) of new bonds Br. 90, 000

PV (market value of old bonds (12 semiannual periods remain in the old issue):

PV of Br. 100, 000 at 4% for 12 periods (Br. 100, 000 x 0.62460) Br. 62, 460

PVOA of 12 rents of Br. 2, 500 semiannual interest

Payments at 4% (Br. 2, 500 x 9.38507)	<u>23, 463</u>	<u>85, 923</u>
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Difference: Economic loss to Tulu Dimtu		Br. <u>4, 077</u>
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Jan. 1, 2004 - Refunding entry

Bonds payable, 5%	100, 000	
Bonds payable, 8%		90, 000
Gain on bond extinguishments		10, 000

2. Refunding by issuing new debt and purchasing old debt. on January 1, 2000 Dashen Corporation issues Br. 100, 000 of 10-years 5% bonds at face value with interest payable each June 31 and December 31. On January 1, 2004, Dashen issues at face value Br. 86, 000 of 20-year, 8 percent bonds with the same interest dates as the 5 percent bonds. The market price of the old bonds is 86. The old bonds are retired.

Jan. 1, 2004 - Issue 8 percent bonds:

Cash	86, 000	
Bonds payable		86, 000

Jan. 1, 2004 - Retire 5 percent bonds:

Bonds payable	100, 000	
Cash	86, 000	
Gain on extinguishments of bonds		14, 000

The accounting gain is Br. 14, 000, but no economic gain or loss occurs because the 5 percent bonds were extinguished at market value.

7.4.4 Extinguishment Through Debt-Equity Swap

Instead of using cash to acquire its outstanding bonds in the open market, the issuer may enter into a debt-equity swap arrangement with an investment banking house of serve as a broker. The broker acquires the issuer's bonds over a period of time in the open market and exchanges the

bonds for shares of the issuer's common stock, which may be un issued or in the treasury. The issuer thus retires the bonds the bonds acquired in the swap with the broker. By this means, the issuer extinguishes long-term debt without using cash, improves its debt-to equity ratio (the ratio of total liabilities to total stockholders' equity)

Example

Assume that a broker acquired in the open market Br. 250, 000 face amount, 10% bonds for a total cost of Br. 225, 000. The bonds had a carrying amount of Br. 252, 500 in the issue records (Br. 250, 000 face amount, plus Br. 6, 000 premium, and less Br. 3, 500 bond issue costs) on December 31, year 4. On that date the issuer provided the broker with 10, 000 shares of its Br. 0.50 par common stock with a current fair value of Br. 24 a share in exchange for the bonds.

Required

Present the Journal entry to record the extinguishments of the debt and issuance of the shares to retire the debt.

Solution:

Bonds payable	250, 000
Premium on Bonds payable	6, 000
Bond issue costs	3, 500
Common stock	5, 000
Paid-in capital in Excess of par	235, 000
Gain on extinguishments of bonds*	12, 500
*Gain = Carrying amount = Br. 252, 500	
Shares price	<u>240, 000</u>
	<u>12, 500</u>

7.4.5 Extinguishments by in-Substance Defeasance

In-substance defeasance is an arrangement where by a company provides for the future repayment of one or more of its long-term debt issues by placing purchased securities in an irrevocable trust, the principal and interest of which are pledged to pay off the principal and interest of its own debt securities as they mature. The company, however, is not legally released from being the primary obligor under the debt that is still outstanding. In some cases, debt holders are not even aware of the transaction and continue to look to the company for repayment.

There are several reasons for arranging such an extinguishment. First, the debt is removed from the balance sheet without actually being repurchased. Actual repurchase is sometimes a problem because (1) it may be costly if a high call premium is required to be paid or (2) much of the debt may be publicly held and may therefore be difficult to buy back in large quantities. Second, because the cost of the purchased securities is usually less than the book value of the company's debt in times of rising interest rates (as interest rates rise, the fair value of the outstanding debt falls below book value), the company records a gain on its income statement. The gain usually does not result in a tax liability because for tax purposes the debt is not considered retired.

To be considered a debt extinguishment (removal from the balance sheet), the debtor must place (1) cash (2) risk-free securities in an irrevocable trust to be used solely for satisfying the interest and principal of the debt. And, the possibility that the debtor will be required to make any future payments with respect to the debt must be remote.

Illustration

Assume that Abeba Corporation had the following ledger account balances related to bonds payable on May 31, year 4, the end of a fiscal year:

8% bonds payable, due May 31, year 13, interest payable

May 31 and Nov. 30, callable at 102	Br.
400, 000	

Discount on bonds payable (based on 10% yield rate)	
46, 758	

Bond issue costs	3, 600
------------------	--------

9% Treasury bonds due May 31, year 13, were trading at a yield rate of 16% on May 31, year 4. Abeba was able to acquire Br. 400, 000 face amount for

$$\frac{16\%}{2}$$

Br. 268, 794 computed as follows: $(n = (13 - 4) \times 2 = 18, i = 8\%)$ present value of Br. 400, 000 at 8% for 18 periods $(Br. 400, 000 \times 0.25025)$ Br. 100, 000 present value of 18 rents of Br. 18, 000 interest payments

at 8% $(Br. 18, 000 \times 9.37, 189)$	168, 694
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Total cost of treasury bonds	Br. 268, 694
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Analysis

Abeba then transferred the 9% treasury bonds to an irrevocable trust for servicing Abeba's 8% bonds payable, which had the same interest payment dates (May 31 and Nov.30) and same maturity date (May 31, year 13) as the treasury bonds. The trustee would use the Br. 18, 000 $(Br. 400, 000 \times 9\%/2)$ semiannual interest of Br.16, 000 $(Br. 400, 000 \times 8\%/2)$ on Abeba's bond and the trustee's fee of Br. 2, 000 semiannually. Further, the trustee would use the Br. 400, 000 proceeds received for the 9% treasury bonds on May 31, year 13, to extinguish the Br. 400, 000 principal of the 8% Abeba bonds that mature on the same date.

The Journal entries related to the above are:

- Investment in 9% treasury bonds	268, 694
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Cash	268, 694
------	----------

To record acquisition of Br. 400, 000 face amount of 9% treasury bonds

- Bonds payable	400, 000	
Discount on bonds payable		46, 758
Un amortized bond issue costs		3, 600
Investment in 9% treasury bonds		268, 694
Gain on extinguishments of bonds		80, 948
To record transfer 9% treasury bonds to irrevocable trust for servicing 8% bonds payable		

Check Your Progress -4

1. What is meant by refunding?

_____.

2. When do we consider as appropriate extinguishments of debts through open-market acquisition?

_____.

3. In extinguishments of bonds through debt-Equity swap, how do we compute gain or loss on extinguishments?

_____.

4. What is meant by in-substance defeasance?

_____.

7.5 OTHER TOPICS RELATING TO LONG-TERM DEBT

7.5.1 Convertible bonds

A convertible bond is exchangeable for capital stock (usually common stock) of the issuer at the option of the investor. Typically convertible bonds are

also callable at a specified redemption, or call price at the option of the issuer. If the bonds are called, the holders either convert the bonds or accept the call price. Convertible often are marketable at lower interest rates than conventional bonds because investors assign a value to the conversion privilege.

The primary attraction of convertible to investors is the potential for increased value if the stock appreciates. If it does not, the investor continues to receive both interest and principal (although usually at a lower rate than non-convertible bonds would provide).

The conversion price is the amount of face value exchanged for each share of stock. Convertible bonds are advantageous to the issuer for several reasons:

- The prospect for raising debt capital is often improved
- The bonds often pay a lower interest rate than non convertible bonds
- If the bonds are converted, the face value is never paid
- Fewer shares may be issued on conversion than in a direct sale of stock
- The call option protects the issuer from having to issue stock with an aggregate value in excess of the call price.

Accounting and Reporting for Convertible Bonds

Accounting for the issuance of convertible bonds poses a conceptual problem. A popular view holds that the economic value of the conversion feature, reflected in the bond price, should be recorded as stock holders' equity, but accounting principles Board (APB) opinion No. 14 specifies that convertible bonds be recorded only as debt. The APB reasoned that the debt and equity features of a convertible bond are inseparable and do not exist independently of each other.

A Separate market does not exist for either the bond standing alone or the conversion privilege. There is no objective basis (Such as a market or an

exchange transaction) for allocating the bond price to the bond and the conversion feature. The value of the conversion feature is contingent on a future stock price, which cannot be predicted.

Accounting for interest expense and amortization of premium or discount is not affected by convertibility. The entire bond term is used for amortization because the date of conversion cannot be anticipated.

When the bonds are converted, the issuer updates interest expense and amortization of premium or discount to the date of conversion. Then, bonds payable is closed. Two methods are acceptable for recording the stock issued upon conversion:

1. **Book value method** - Record the stock at the book value of the convertible bonds; recognize neither gain nor loss.
2. **Market value method** - Record the stock at the market value of stock or debt, which ever is more reliable. A gain or loss equal to the difference between the market value and the book value of debt is recognized.

Illustration

Assume that Tollen Corporation sells Br. 100, 000 of 8 percent convertible bonds for Br. 106, 000. Each Br. 1, 000 bond is convertible to 10 shares of Tollen Corporation Br. 10 par common stock on any interest date after the end of the second year from date of issuance.

And also assume that the bonds are converted on an interest date. On the conversion date, the stock price is Br. 110 per share, and Br. 3, 000 of premium remains unamortized after updating the premium account.

Required

Present Journal entries at the date of acquisition and conversion of the convertible bonds:

Solution

(1) At the date of acquisition

Cash	106, 000	
Convertible bonds payable		100, 000
Premium on bonds payable		6, 000

(2) At the date of conversion

(i) Book value method

Bonds payable	100, 000	
Premium on bonds payable	3, 000	
Common stock		10, 000
Paid-in capital in excess of par		93, 000

Computation

$$\begin{aligned} \text{No. of bonds} &= \frac{\text{Br. } 100,000}{\text{Br. } 1,000} = 100, \text{ Each is converted to 10 shares of Br. } 10 \\ \text{par common stock } 100 \times 10 \times \text{Br. } 10 &= \text{Br. } 10,000 \\ \text{Paid-in capital in excess of par} &= \text{Book value of bonds} - \text{par value of common stock} \\ &= \text{Br. } 103,000 - \text{Br. } 10,000 = \text{Br. } 93,000 \end{aligned}$$

(ii) Market value method

Bonds payable	100, 000	
Premium on bonds payable	3, 000	
Loss on conversion of bonds	7, 000*	
Common stock		10, 000
Paid in capital in excess of par		100,000**

* Loss = Market value of stock issued - Book value of bonds = (Br. 110 x 100 x 10) - Br. 103, 000 = 700

* Paid-in capital in excess of par = Market value of stocks issued (Br. 110, 000) - par value (Br. 10, 000) = Br. 100, 000

7.5.2 Bonds Issued With Stock Warrant Attached

A detachable stock warrant conveys the option to purchase from the issuer a specified number of common stock at a designated price per share, within a stated time period. The warrant is valuable because it enables the holder to buy stock for less than market value if the market value rises above the designated price. Hence, warrants generally increase the bond price.

Two methods of accounting for bonds with detachable stock warrants. Proportional method and incremental method.

Illustration

Kalub Corporation issues Br. 100, 000 of 8 percent, 10 year, non-convertible bonds with detachable stock warrants. Each Br. 1, 000 bond carries 10 warrants. Each entitles the holder of the bond to purchase one share of Br. 10 par common stock for Br. 15. The bond issue therefore includes 1, 000 warrants (100 x 10 warrants per bond). Assume the bond issue sells for 105 exclusive of accrued interest shortly after issuance, the warrants trade for Br. 4 each.

(1) Proportional method

This method is used if both the bonds and the warrants have market values. Assume, shortly after issuance, the bonds were quoted at 103 ex-warrants (without warrants attached).

Market value of the bonds (Br. 100, 000 x 1.03)	Br. 103, 000
Market value of warrants (Br. 4 x 1, 000)	<u>4, 000</u>
Total market value of bonds and warrants	Br. <u>107, 000</u>
	<u>Br. 103, 000</u>
	<u>Br. 107, 000</u>
Allocation of proceeds (Br. 100, 000 x 1.05) to bonds (Br. 105 x 101, 075	) Br.

	Br. 4,000	
	Br. 107,000	
Allocation of proceeds to warrants (Br. 105, 000 x Br.		3, 925

Journal entry:

Cash (1.05 x Br. 100, 000)	105, 000	
Bonds payable		100, 000
Detachable stock warrants		3, 925
Premium on bonds payable (Br. 101, 075 – Br. 100, 000)		1, 075

2. Incremental Method

This method is used if only one security has market value. If one security has a market value, such value is assigned to the one security, and the remainder of the proceeds is assigned to the other security.

In the above example, assume the bonds have no market value. The proceeds of Br. 4, 000 is assigned to stock warrants and the remainder (Br. 105, 000 – Br. 4, 000 = Br. 101, 000) is assigned to the bonds.

Journal entry:

Cash	105, 000	
Bonds payable		100, 000
Detachable stock warrants		4, 000
Premium on bonds payable		1, 000

The entry to account for exercise under the incremental method example, assuming no subsequent change in the market value of warrants, is as follows:

Cash (1, 000 x Br. 15)	15, 000	
Detachable stock warrants		4, 000
Common stock (1, 000 x Br. 10)		10, 000
Paid-in capital in excess of par		9, 000

7.5.3 Zero-Coupon (Deep-Discount) Bonds

Zero-coupon bonds do not pay interest; thus, they are in substance a long-term version of commercial paper issued by corporation. Because of their long term to maturity, zero-coupon bonds are issued at a deep discount. Because zero coupon bonds do not bear interest, the only journal entry subsequent to issuance and prior to extinguishments of the bonds is entry for amortization of the deep discount.

Illustration

On Jan. 2, year 5, Tolla Company issued Br. 500, 000 of 20-year, zero-coupon bonds to yield 16% compounded semiannually to finance a plant expansion program. The journal entries for year 5 are as follows:

($i = 16\%/2 = 8\%$, $n = 20 \times 2 = 40$)

Proceed = present value of Br. 5, 000, 000 discounted at 8% for 40 periods
= Br. 500, 000 $\times$ 0.046031 = Br. 230, 155

Jan. 2, year 5 (To record issuance)

Cash	230, 155	
Discount on bonds (5000, 000 - 230, 155)	4, 769, 845	
Bonds payable		500, 000

June 30, year 5 (to record semiannual interest)

Bond interest expense (Br. 230, 155 $\times$ 0.08)	18, 412
Discount on bonds payable	18, 412

December 31, year 5

Bond interest expense [(Br. 230, 155 + Br. 18, 412) $\times$ 0.08]	19, 885
Discount on bonds payable	19, 885

7.5.4 Accounting for Restructured Debt

Business enterprise that encounter financial difficulties sometimes are able to negotiate more favorable terms with creditors for existing current or

long-term debt. The result of such an arrangement is referred to as a restructuring of debt and may include the following provisions:

- (1) Extension of the due date of principal and interest payments
- (2) Reduction in the rate of interest on existing debt
- (3) Forgiveness by creditors of a portion of principal or accrued interest.

FASB statement No. 15, "Accounting by debtors and creditors for troubled debt restructurings," was issued to clarify the proper accounting for these types of transactions, referred to as troubled debt restructurings. A troubled debt restructuring occurs when the creditor for economic or legal reasons related to the debtor's financial difficulties grants a concession to the debtor that it would not otherwise consider.

A troubled debt restructuring involves one of two basic types of transactions:

1. Settlement of debt at less than its carrying amount
2. Continuation of debt with a modification of terms

If the concession involves the creditor's acceptance of non-cash assets, preferred stock, or common stock with a current fair value less than the carrying amount of the troubled debt, the debtor recognizes a gain on restructuring of payable that, if material in amount is reported as an extraordinary item. However, no gain is recognized by debtors when only a modification of terms is evolved, unless the carrying amount of the restructured debt exceeds the total future cash payments specified by the new terms. If the carrying amount of the restructured debt exceeds future cash payments, the debtor reduces the carrying amount of the debt, and all cash payments are recorded as reductions in the debt. Thus, the debtor recognizes a gain equal to the reduction in the carrying amount of the restructured debt, and no interest expense is recognized between the date of restructuring and the revised maturity date of the restructured debt.

Illustration (modification of terms)

Assume that a corporation has the following troubled debt on 31 December 2003:

Note payable, 12%, due 31 December, 2003	Br. 2, 500, 000
Interest payable	300, 000

On December 31, 2003, the troubled debt was restructured as follows:

Case 1:

- a. Br. 250, 000 of the note principal and the Br. 300, 000 of interest payable were forgiven by the creditor
- b. The maturity date was extended to 31 December, 2008
- c. The interest rate was reduced from 12% to 8% a year on the Br. 2, 250, 000 reduced principal amount of the note and was payable on 31 December 2008.

Case 2: Items “a” and “b” above are maintained but now assume that the interest rate was reduced from 12% to 4%, payable annually

Required

1. What is the carrying value of the troubled debt before restructuring?
2. What is the total interest on the restructured debt under case 1?
3. What is the total future cash payments under case 1?
4. What is the excess of the total future payments over the carrying amount of the debt before restructuring under case 1?
5. Present the Journal entries to record the troubled debt restructuring, interest expense, and the payment on 31 December 2008.
6. What is the total interest on the restructured debt under case 2?
7. What is the total future cash payments under case 2?
8. What is the amount of the gain on restructuring of the troubled debt?
9. Present the Journal entry to record the restructuring of the troubled debt on 31 December, 2003 under case 2
10. Present the Journal entry to record payment of interest on 31 December 2004 under case 2
11. Present the Journal entry to record the payment on principal on 31 December, 2008 under case 2

Solution

1. The carrying value of the troubled debt before restructuring:

Principal	Br. 2, 500, 000
Interest	<u>300, 000</u>
Carrying value	Br. <u>2, 800, 000</u>

2. The total interest on the restructured debt under case 1:

Principal (restructured)	Br. 2, 250, 000
Interest rate (new)	<u>8%</u>
Interest per year	Br. 180, 000
Credit term (new)	<u>5 years</u>
Total interest	Br. <u>900, 000</u>

3. Total future cash payments under case 1:

Principal	Br. 2, 250, 000
Interest	900, 000
Total	Br. 3, 150, 000

4. The excess of the total future cash payments over the carrying amount of the troubled debt:

Future cash payments	Br. 3, 150, 000
Carrying value	2, 800, 000
Excess	Br. <u>350, 000*</u>

* This excess is recognized as interest expense at a computed interest rate of 2.38363% on the carrying amount of the debt as follows: (Computed by use of a computer program)

2004:	Br. 2, 800, 000 x 0.0238363	= Br. 66, 742
2005:	2, 866, 742 x 0.0238363	= 68, 332.50
2006:	2, 935, 074 x 0.0238363	= 69, 961.50
2007:	3, 005, 035 x 0.0238363	= 71, 629
2008:	3, 076, 664 x 0.0238363	= <u>73, 335.80</u>

Total interest expense on the restructured troubled debt Br. 350, 000

5. Journal entries to record the troubled debt restructuring, interest expense, and the payment on 31 December 2008

Notes payable	2, 500, 000	
Interest payable	300, 000	
Discount on restructured notes payable	350, 000	
Restructured Notes payable		3, 150, 00

(To record the restructuring)

Interest expense	66, 742	
Discount on Restructured notes payable	66, 742	

(to record interest expense for 2004)

- * There is no payment of interest. It was forgiven by the creditor
- | | | |
|----------------------------|-------------|--|
| restructured notes payable | 3, 150, 000 | |
|----------------------------|-------------|--|

Cash	3, 150, 000	
------	-------------	--

6. The total interest on the restructuring of debt under case 2 Br. 2, 250, 000 x 4% x 5years = Br.450, 000

7. Total future cash payments under case 2:

Principal	Br. 2, 250, 000	
Interest	<u>450, 000</u>	
Total		Br. <u>2, 700, 000</u>

8. The amount of the gain on restricting of the troubled debt

Carrying value of troubled debt	Br. 2, 800, 000	
Total future payment of the restructured debt	<u>2, 700, 000</u>	
Gain on restructuring of troubled debt		Br. <u>100, 000</u>

9. Notes payable 2, 500, 000

Interest payable	300, 000	
Restructured notes payable		2, 700, 000
Gain on restructuring of troubled debt		100, 000

10. Journal entry to record payment of interest on 31 December 2004 under case 2. (In this case there is payment of interest)

Restructured Note payable	90, 000	
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Cash	90, 000
11. Journal entry to record the payment of principal under case 2:	
Restructured notes payable	2, 250, 000
Cash	2, 250, 000

Check Your Progress -5

1. What are the advantages to a growing corporation of issuing convertible bonds?

_____.

2. Explain the debtor's accounting for a troubled debt restructuring involving only a modification of terms.
 - a. When the carrying amount of the debt exceeds the total future cash payments specified by the new terms?
 - b. When the carrying amount of the debt is less than the future cash payments specified by the new terms?
3. How is the current fair value of non-detachable warrants attached to issue bonds accounted for?

7.6 SUMMARY

Long-term debt consists of probable future sacrifices of economic benefits arising from present obligations that are not payable within the operating cycle or within a year, whichever is longer. It is valued at the present value of its future cash flows, which consist of (1) interest and (2) principal. Discounts and premiums are the difference between the face value and the present value of the debt and arise when the market (effective) rate of interest on the debt differs from the stated (nominal) rate of interest. Discounts and premiums are amortized and changed to expense over the period of time that the debt is outstanding by applying a constant rate of interest to the carrying value of the debt (effective interest method). The

straight-line method is acceptable if the results obtained are not materially different from those produced by use of the effective interest method.

Debt issue costs are currently classified as a deferred charge and amortized over the life of the debt, although an argument can be made for either expensing such costs or reducing the carrying value of the debt.

When debt is extinguished, any difference between its net carrying amount and its reacquisition price is treated as an extraordinary gain or loss. For an in-substance defeasance transaction to be considered debt extinguishments, the debtor must place (1) cash or (2) risk-free securities in an irrevocable trust to be used solely for satisfying the interest and principal of the debt.

Whether the troubled debt restructuring is “a settlement of the debt” or a “continuation of the debt with a modification of terms”, the concessions granted the debtor (borrower) by the creditor (lender) generally result in a gain to the debtor and a loss to the creditor. The gain and the loss are measured as the difference between the carrying amount (book value) of the obligation immediately prior to restructuring and the undiscounted total future cash flows required after restricting.

7.7 ANSWERS TO CHECK YOUR PROGRESS

1 i. At a discount

ii. It will decline over the term of the bonds

iii. If the effective interest rate is applied to amount of the debt outstanding at the beginning of any given period, it will result in a constant rate of interest. So, it is more accurate result than a straight-line method.

2. i. It is classified as a deferred charge and amortized over the life of the debt.

ii. It is a variation of the straight-line method and results in a decreasing amount of premium or discount amortization each accounting period proportionate of the decrease in the amount of outstanding serial bonds

iii. A fund established for the retirement or settlement of bonds

3. i. By exercising the call provision

- by open-market acquisition
- through debt-equity swap
- through refunding
- by in-substance defeasance

ii. It is computed as a difference between the amount paid to retire the bonds and their carrying amount, including any unamortized bond issue costs. A material gain or loss is reported in the income statement as extraordinary item.

4. i. The process of retiring a bond issue with the proceeds of a new bond issue

ii. When interest rates are rising and bond prices are falling

iii. A difference between the carrying amount of the bonds on the date of extinguishments and the market price of the shares issued

iv. An arrangement whereby a company provides for the future repayment of one or more of its long-term debt issues by placing purchased securities in an irrevocable trust, the principal and interest of which are pledged to pay off the principal and interest of its own debt securities as they mature.

5. i. - the prospect for rising debt finance is improved

- the bonds often pay a lower interest rate than non convertible bonds
- if the bonds are converted, the face value of never paid
- fewer shares may be issued on conversion than in a direct sales of stock
- the call option protects the issuer from having to issue stock with an aggregate value in excess of the call price

ii. a. recognize gain (loss) on restructure. Recognize no interest expense or revenue over the remaining life of debt

- b. Recognize no gain (loss) on restructure. Determine new effective interest rate to be used in recording interest expense (debtor) and interest revenue (creditor)
- iii. No separate market value for the stock warrants and bonds and the entire bond price is allocated to the bonds

7.8 MODEL EXAMINATION QUESTIONS

Part I True/False

- _____ 1. Discount and premium are liability valuation accounts that are reported as a direct deduction from or addition to the face value of the debt.
- _____ 2. Long-term debt is valued and recorded at the present value of its future cash flows.
- _____ 3. Bonds issued between interest dates do not require payment of accrued interest by the investor.
- _____ 4. Extinguishments of debt is accomplished by direct cash payment or replacement with another debt instrument, by obtaining a release from the creditor, or by placing assets in an irrevocable trust sufficient to pay the debt.
- _____ 5. If the cash received for bonds issued with detachable stock warrants attached exceeds the total of the face amount of the bonds and the current fair value of the stock warrants, the excess is credited to Retained Earnings.

Part II. Multiple Choices

- _____ 1. Delia Company incurred costs of Br. 6,600 when it issued, on August 31, 1990, five -year debenture bonds dated April 1, 1990. What amount of bond issue expense should Delia report in its income statement for the year ended December 31, 1990?
- A. Br. 440
- B. Br. 480
- C. Br. 990

D. Br. 6,600

_____ 2. The following information pertains to Hake Sports Inc. issuance of bonds on July 1, 1993;

Face amount -----Br. 400,000

Term -----10 years

Stated interest rate -----6%

Interest payment dates -----Annually on July 1.

Yield -----9%

What is the issue price for each Br. 1000 bond?

A. Br. 1000

B. Br. 864

C. Br. 807

D. Br. 700

_____ 3. During 1993, Camilla Company experienced financial difficulties and was likely to default on a Br. 500,000, 15 percent, three-year note dated January 1, 1994, payable to National Bank. On December 31, 1995, the bank agreed to settle the note and unpaid 1995 interest of Br. 75,000 for Br. 410,000 cash payable on January 31, 1996. What is the amount of gain, before income taxes, from the debt restricting?

A. Br. 0

B. Br. 75,000

C. Br. 90,000

D. Br.

165,000

_____ 4. On July 1, 1990, Center Company paid Br. 599,000 for 10 percent, 20-year bonds with a face value of Br. 500,000. Interest is paid on December 31 and June 30. The bonds were purchased to yield 8 percent. Center uses the interest method to recognize interest income from this investment. What is the carrying amount of this investment in bonds in center's December 31, 1990, balance sheet if Center Company intends to hold the bonds to maturity?

A. Br. 603,950

B. Br. 599,000

C. Br. 597,960

D. Br. 596,525

_____ 5. The yield rate of interest for bonds that are issued for more than face amount is:

- A. Less than the nominal rate
- B. Equal to the nominal rate
- C. Larger than the nominal rate
- D. Independent of the nominal rate

Part III. Exercises

1. On august 1, 1990, Lah Corporation a calendar-year corporation that records adjusting entries only once per year, issued bonds with the following characteristics:

- a) Br. 50,000 total face vale
- b) 12 percent stated rate
- c) 16 percent yield rate
- d) Interest dates are February 1, May 1, August 1 and November 1.
- e) Bond date is October 31, 1999
- f) Maturity date is November 1, 1994
- g) Br. 1000 of bond issue costs were incurred

Required:

(1) Provide all entries required for the bond issue thorough February 1, 1991, for Lah Corporation using the interest method

(2) on June 1, 1992, LaH corporation retired Br. 20,000 of bonds at 98 through open market purchase. Provide the entries to update the bond accounts for this portion of the bond issue and to retire the bonds using the interest method.

(3) Provide the entries required on august 1, 1992 under the following methods of discount amortization:

- a) Interest method
- b) Straight-line method

2. In each of the following independent case the company closes its books on December 31.

A. Kangaroo Company sells Br. 250,000 of 10% bonds on March 1, 1992. The bonds pay interest on September 1 and March 1. The due date of the bonds is September 1, 1995. The bonds yield 12%. Give entries through December 31, 1993.

B. Nice company sells Br. 600,000 of 12% bonds on June 1, 1992. The bonds pay interest on December 1 and June 1, 1996. The bonds yield 10%. On September 1, 1993, Nice Company buys back Br. 120,000 worth of bonds for Br. 126,000 (including accrued interest). Give entries through December 1, 1994.

3. On April 1, 1992, Rector company sold 12,000 of its 12%, 15-year, Br. 1000 face value bonds at 97. Interest payment dates are April 1 and the company uses the straight-line method of bond discount amortization. On March 1, 1993, Rector took advantage of favorable prices of its stock to extinguish 3000 of the bonds by issuing 100,000 shares of its Br. 10 par value common stock. At this time, the accrued interest was paid in cash. The company's stock was selling for Br. 31 per share on March 1, 1993.

Required: Prepare the journal entries needed on the books of Rector company to record the following

a) April 1, 1992; issuance of the bonds

b) October 1, 1992: payment of semiannual interest

c) December 31, 1992: accrual of interest Expense

d) March 1, 1993: extinguishments of 3000 bonds. (No reversing entries made)

4. On January 2, year 5, Golf Company issued 12% bonds with a face amount of Br. 1,000,000. The bonds mature in 10 years, and interest is paid semiannually on June 30 and December 31. The bonds were issued for Br. 894,060 to yield 14% compounded semiannually.

Required: Using the interest method, compute the amount that should be debited by Golf Company to Bond interest Expense in year 5.

5. Ethio Company, which uses the interest method to amortize bond discount, issued Br. 10,000,000 face amount, 20-year, are-coupon bonds on March 31, 1990, to yield 14% compounded semiannually.

Required: Show how the amounts related to Ethio-company's zero-coupon bonds appear in its balance sheet on March 31, 1991, assuming Ethio. Paid Br. 80,000 bond issue costs on March 31, 1990.

7.9 GLOSSARY

1. Bond: a debt security issued by Companies and government units to secure large amounts of capital on a long-term basis.
2. Convertible bond: an exchangeable for capital stock (usually common stock) of the issuer at the option of the investor.
3. Bond issue costs: Legal, accounting, underwriting, commission, engraving, printing, registration, and promotion costs.
4. Ins-substance defeasance: an arrangement whereby a company provides for the futures repayment of one or more of its long-term debt issues by replacing purchased securities in an irrevocable trust, the principal and interest of which are pledged to pay off the principal and interest of its own debt securities as they mature.
5. Refunding: the process of retiring a bond issue with the proceeds of a new bond issue.
6. Sinking fund: a cash fund restricted for a specific purpose and classified as investment.