**unit 3: additional valuation problems for inventories**

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1. **Aims and Objectives**

This chapter aims at discussing various valuation methods like lower of cost or market, retail method and gross profit method.

After studying this chapter, you would be able to:

1. explain the valuation of inventory at other than cost, including valuation at the lower of cost or market.
2. acquaint yourself with various methods of estimating cost of an inventory, including retail method and gross profit method.

**3.1 Introduction**

an attempt has been made in this unit to explain valuation of inventory valuation and the problems such as valuation at lower of cost or market, retail method and gross profit method of estimating an inventory cost.

**3.2 Valuation at lower of cost or market (LCM)**

It was explained how costs are assigned to ending inventory and cost of goods sold using one of four costing methods (FIFO, LIFO, Weighted average, or specific identification). Yet, the cost of inventory is not necessarily the amount always reported on a balance sheet. Accounting principles require that inventory be reported at the market value of replacing inventory when market is lower than cost. Merchandise inventory is then said to be reported on the balance sheet at the lower of cost or market (LCM).

In applying LCM, cost is the acquisition price of inventory computed using one of the historical cost methods - specific identification, FIFO, LIFO, and Weighted average; market is defined as the current market value (cost) of replacing inventory. It is the current cost of purchasing the same inventory items in the usual manner. It is important to know that market is not defined as the sales prices. A decline in market cost reflects a loss of value in inventory. This is because the recorded cost of inventory is higher than the current market cost. When this occurs, a loss is recognized. This is done by recognizing the decline in merchandise inventory from recorded cost to market cost at the end of the period.

LCM is applied in one of three ways:

1. *Separately to individual item*
2. *To major categories of items*
3. *To the whole of inventory*

The less similar the items are that make up inventory, the more likely it is that companies apply LCM to individual items. Advances in technology further encourage the individual item application.

***Illustration***

The following are the inventory of ABC motor sports, retailer.

***Inventory units per unit***

 ***Items on hand cost market***

Cycles:

*Roadster 50 Br. 15,000 Br. 14,000*

*Sprint 20 9,000 9,500*

Off Road:

*Trax-4 10 10,000 11,200*

*Blaz’m 6 16,000 14,500*

Let us see LCM computation under the three ways:

1. **Separately to each individual item**

***Inventory items Total cost Total market LCM***

Roadster Br. 750,000 Br. 700,000 Br. 700,000

 Sprint 180,000 190,000 180,000

Categories sub total Br. 930,000 Br. 890,000

 Trax-4 100,000 112,000 100,000

 Blaz’m 96,000 87,000 87,000

Categories sub total Br. 196,000 Br. 199,000

 Totals Br.1,126,000 Br. 1,089,000 Br. 1,1,067,000

1. **Major categories of items**

***Inventory Categories Categories LCM***

***categories total cost total market***

Cycles Br. 930,000 Br. 890,000 Br. 890,000

Off. Road 196,000 199,000 199,000

Totals Br. 1,126,000 Br. 1089,000 Br. 1,086,000

When LCM is applied to the whole of inventory, the market cost is Br. 1,089,000. Since this market cost is Br. 37,000 lower than Br. 1,126,000 recorded cost, it is the amount reported for inventory on the balance sheet. When LCM is applied to individual items of inventory, the marked cost is Br. 1,067,000. Since market is again less than Br. 1,126,000 cost, it is the amount reported for inventory. When LCM is applied to the major categories of inventories, the market is Br. 1,086,000 which is also lower than cost.

**Check Your Progress Exercise -1**

1. In the phrase lower of cost or market, what is meant by “market”?

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1. Blen Trading value its inventory, shown below, at the lower of cost or market. Compute Blen's inventory value using (i) item – by – item method, and (ii) the major category method.

 **Per Unit**

**Quantity Cost Market**

***Category I***

 Item A 200 Br. 5.00 Br. 4.00

 Item B 300 4.00 4.00

 Item C 400 10.00 8.60

***Category II***

 Item X 500 8.00 9.20

 Item Y 300 14.00 14.50

**3.3 Estimating inventory cost**

In practice, an inventory amount is estimated for some purposes. When it is impossible to take a physical inventory or to maintain perpetual inventory records.

***Example***

* + 1. Monthly income statements are needed. It may b e too costly, to take physical inventory. This is especially the case when periodic inventory system is used.
		2. When a catastrophe such as a five has destroyed the inventory. In such case, to ask claims from insurance companies, the is a need of estimated inventory.

To estimate the cost of inventory, two methods are used. These are retail method and gross profit method.

**3.3.1 Retail method of inventory costing**

This method is mostly used by retail business. The estimate is made based on the relation ship between the cost and the retail price of merchandise available for sale.

The steps to be followed are:

1. Calculate the cost to retail ratio = Cost of merchandise available for sale

Retail Price of merchandise available for sale

1. Calculate the ending inventory at retail price

 Ending inventory at retail price = retail price of merchandise available for sale – ***Sales***

1. Calculate the estimated cost of ending inventory

 Estimated cost of ending inventory = Cost to retail ration X ***Ending inventory at retail***

***Example***

  **Cost Retail**

 Sep. 1, beginning inventory Br. 25,000 Br. 40,000

 Purchases in September (net) 125,000 160,000

 Sales in September (net) 140,000

(1) Cost retail ration = Br. 25,000 + Br. 125,000 = 0.75

 Br. 40,000 + Br. 160,000

(2) Ending inventory at retail = (Br. 40,000 + Br. 160,000) – Br. 140,000 = Br. 60,000

(3) Estimated ending inventory at cost = 0.75 X Br. 60,000

 = Br. 45,000

**Check Your Progress Exercise -2**

1. Enterprises using the retail method of inventory costing determine the merchandise inventory at retail is Br. 300,000. If the ratio of cost of retail price is 65%, what is the estimated cost of inventory?

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1. Does the retail inventory method mean that inventories are measured at retail value on the balance sheet? Explain.

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**3.3.2 Gross profit method**

This method uses an estimate of the gross profit realized during the period to estimate the cost of inventory. The gross profit rate may be estimated based on the average of previous period’s gross profit rates.

The steps are as follows:

1. The gross profit rate is estimated and then estimated gross profit is calculated.

 Estimated gross profit = Gross profit rate X Sales

1. Cost of merchandise sold is estimated

 Estimated cost of merchandise sold = Sales - Estimated gross profit

1. Calculate the estimated cost of ending inventory

 Estimated cost of ending inventory =

Cost of merchandise available for sale – Estimated cost of merchandise sold.

***Example***

Oct. 1, beginning inventory (cost) – Br. 36,000

Net purchases during October (cost) 204,000

Net sales during October 220,000

Estimated gross profit rate is 40%

The ending inventory is estimated as follows:

1. Estimated gross profit = 0.4 X 220,000

= Br. 88,000

1. Estimated cost of merchandise sold

= Br. 220,000 – Br. 88,000

= Br. 132,000

1. Estimated cost of ending inventory

= (Br. 36,000 + 204,000) – Br. 132,000

= Br. 240,000 – Br. 132,000

= Br. 108,000

**Check Your Progress Exercise-3**

1. Cost of merchandise available for sale is Br. 200,000 and net sales for the period is Br. 180,000. If the cost of merchandise sold percentage of sales is 60%, what is the estimated cost of the inventory to be reported on the financial statements?

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1. What are some of the reasons that may cause management to use the gross profit method of estimating inventory?

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**3.4 summary**

If the market price of an item of inventory is lower than its cost, the lower of cost or market method is used to value inventory. Market, as used in the phrase lower of cost or market; is interpreted to mean the cost to replace merchandise on the inventory date. It is possible to apply the lower of cost or market basis to each item in the inventory, to major classes or categories, or to the inventory as a whole.

When it is impractical or impossible to take a physical inventory or to maintain perpetual inventory records, two commonly used methods of estimating inventory would be applied:

1. the retail method and
2. the gross profit method

The retail method of inventory estimation is based on the relation ship of the cost of merchandise available for sale to the retail prices of the same merchandise. The inventory at retail is determined by deducting net sales for the period from the retail price of the goods that were available for sale during the period. The inventory at retail is then converted to cost on the basis of the ratio of cost to selling price of the merchandise available for sale.

The gross profit method of estimating inventory is based upon the historical relationship of the gross profit to the sales. The rate of gross profit is multiplied by the sales to determine the gross profit. To determine the cost of merchandise sold, the gross profit is then subtracted from sales. The estimated cost of ending inventory is computed by subtracting the cost of merchandise sold from cost of merchandise available for sale.

**3.5 Answers to check your progress exercises**

***Check Your Progress Exercise 1***

1. The cost to replace merchandise on the inventory date
2. (i) Item – by – item method:

***Category I Total Cost Total Market LCM***

 Item A Br. 1000 Br. 800 Br. 800

 Item B 1200 1320 1200

 Item C 4000 3440 3440

***Category II Total Cost Total Market LCM***

 Item X Br. 4000 Br. 4600 Br. 4000

 Item Y 4200 4350 1200

**Inventory of LCM Br. 13,640**

(ii) The Major Category Method

***Category I Total Cost Total Market LCM***

 Item A Br. 1000 Br. 800

 Item B 1200 1320

 Item C 4000 3440

 Totals **Br. 6200** **Br. 5560** **Br. 5560**

***Category II Total Cost Total Market LCM***

 Item X Br. 4000 Br. 4600

 Item Y 4200 4350

 Totals **Br. 8200 Br. 8950** Br. 8200

**Inventory of LCM Br. 13,760**

***Check Your Progress Exercise 2***

1. It is Br. 195,000 computed as 0.65 X Br. 300,000
2. No, the inventory at retail is converted to cost on the basis of the ratio of cost to retail. Therefore, it is reported on the balance sheet at its estimated cost.

***Check Your Progress Exercise 3***

1. It is Br. 92,000 computed as follows

 Cost of merchandise sold = Br. 180,000 X 0.60 = Br. 108,000

 Estimated cost of ending inventory = Br. 200,000 – Br. 108,000

 = Br. 92,000

1. To replace the retail method when records of the retail prices of beginning inventory and purchases are not kept.

To prepare interim financial statements, and to estimate the inventory lost or destroyed by theft, fire, or other hazards.

**3.6 model examination questions**

**A. Short answer questions**

1. From three ways of applying lower of cost or market, which one results in minimum value of inventory?
2. When do we use the inventory estimation methods to determine the cost of inventory?

**B. Work out questions**

 1. Crystal Corporation’s ending inventory includes the following items.

***Product Units on hand Unit cost Replacement cost per unit***

 W 40 Br. 30 Br. 34

 X 50 48 40

 Y 60 26 24

 Z 44 20 20

Replacement cost is determined to be the best measure of market. Calculate lower of cost or market for the inventory

1. As a whole b. Applied separately to each products

2. The records of the unlimited provided the following information for the year ended December 31:

  ***At cost At retail***

 Jan. 1 beginning inventory Br. 160,450 Br. 264,900

 Purchases 1,100,140 1,828,200

 Purchases returns 17,600 34,100

 Sales \_ 1,570,200

 Sales returns \_ 15,600

 Transportation in 13,000 \_

***Required:*** calculate the estimated cost of ending inventory

* 1. By retail method
	2. By gross profit method if the gross profit rate is 30%
1. Rahel Company's Dress shop had net retail sales of Br. 1,000,000 during the current year. The following additional information was obtained from the accounting records:

 ***At Cost At Retail***

 Beginning Inventory Br. 160,000 Br. 240,000

 Net Purchase 560,000 880,000

 Transportation – In 41,600

***Required:***

1. Estimate the company's ending inventory at cost using the retail method.
2. Assume that a physical inventory taken at year-end revealed an inventory on hand of Br. 72,000 at retail value. What is the estimated amount of inventory shrinkage (loss due to theft, damage, and so forth) at cost?
3. Fantu and his family is a large retail furniture company that operates in two adjacent warehouses. One warehouse is a showroom, and the other is used to store merchandise. On the night of March 13, a fire broke out in the storage warehouse and destroyed the merchandise stored there.

Fortunately, the fire did not reach the showroom, so all the merchandise on display was saved.

Although, the company maintained a perpetual inventory system, its records were rather had hazard, and the last reliable physical inventory was taken on December 31. In addition, there was not control of the flow of the goods between the show room and the warehouse.

Thus, it was impossible to tell what goods should be in either place. As a result, the insurance company required an independent estimate of the amount of loss. The insurance company examiners were satisfied when they were provided with the following information.

1. Merchandise Inventory on December 31 Br. 1,454,800

2. Purchase, January 1 to March 13 2,412,200

3. Purchase Returns, Jan. 1 to March 13 (10,706)

4. Freight – In, Jan 1 to March 13 53,100

5. Sales, January to March 13 3,959,050

6. Sales Returns, Jan 1 to March 13 (29,800)

7. Merchandise Inventory in Showroom March 13 402,906

8. Average gross Margin 44%

***Required:***

Prepare a schedule that estimates, the amount of the inventory lost in the fire.

1. **Sanete Trading Company** switched recently to the retail inventory method to estimate the cost-ending inventory. To test this method, the company took a physical inventory one month after its implementation. Cost, retail, and the physical inventory data are as follows:

 ***At Cost At Retail***

Beginning Inventory, January 1 Br. 472,132 Br. 622,800

Purchase 750,000 1,008,400

Freight – In 8,350

Purchases Returns and Allowances (25,200) (34,800)

Sales 1,060,000

Sales Returns and Allowances (28,000)

January 31, Physical Inventory 508,200

***Required:***

1. Prepare a schedule to estimate the amount of **Sanete** **Company's** January 31 inventory using the retail method.
2. Use the company's cost ratio to reduce the retail value of the physical inventory to cost.
3. Calculate the estimated amount of inventory shortage of cost and at retail.