Chapter 7 Study Guide: Inventory and Cost of Goods Sold

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1. Introduction to Inventory and COGS

2. Types of Inventory

Inventory can be categorized based on the type of business:

- **Merchandise Inventory**: Goods purchased by a company for resale.
- **Raw Materials Inventory**: The basic materials that are used in the production of goods.
- **Work-in-Process Inventory**: Goods that are in the process of being manufactured but are not yet completed.
- **Finished Goods Inventory**: Completed goods that are ready for sale.

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3. The Inventory System

Companies can use different systems to track and record inventory. The two primary methods are:

- **Perpetual Inventory System**: Continuously updates inventory records for each purchase and sale. It provides real-time data on inventory levels and COGS.
    - **Example**: A retail store that uses barcode scanning to update inventory.
- **Periodic Inventory System**: Updates inventory records at the end of a period (e.g., monthly or annually). Inventory counts are performed at the end of the period to determine COGS.
    - **Example**: A small business that counts inventory at the end of the year.

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4. Inventory Valuation Methods

Inventory can be valued using different methods, and each method affects the cost of goods sold and the ending inventory. The most common methods are:

- **First-In, First-Out (FIFO)**: Assumes that the first items purchased are the first ones sold. Under FIFO, the oldest inventory is used to calculate COGS, and the newest inventory remains in ending inventory.
- **Last-In, First-Out (LIFO)**: Assumes that the last items purchased are the first ones sold. Under LIFO, the most recent purchases are used to calculate COGS, and the older inventory remains in ending inventory.
- **Weighted Average Cost (WAC)**: Averages the cost of all inventory available for sale during the period and applies that average to both COGS and ending inventory.

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5. Impact of Inventory Methods on Financial Statements

The choice of inventory method can affect the reported **Cost of Goods Sold (COGS)**, **Net Income**, and **Inventory** on the balance sheet. This is particularly important in times of rising or falling prices (inflation or deflation).

- **FIFO**: In periods of rising prices, FIFO results in lower COGS and higher net income, since older (cheaper) inventory is sold first. Ending inventory will be higher, reflecting the current (more expensive) inventory.
- **LIFO**: In periods of rising prices, LIFO results in higher COGS and lower net income, since newer (more expensive) inventory is sold first. Ending inventory will be lower, reflecting older (cheaper) inventory.
- **WAC**: The weighted average method smooths out price fluctuations by averaging the cost of all items in inventory.

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6. Lower of Cost or Market (LCM) Rule

The **Lower of Cost or Market (LCM)** rule requires companies to write down inventory to its market value if the market value is lower than its cost. This ensures that inventory is reported at a realistic value and reflects potential losses in the market value of inventory.

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7. Calculating and Understanding COGS

- **COGS Formula**:

  COGS = Beginning Inventory + Purchases during the Period – Ending Inventory

- The COGS calculation is crucial for determining profitability, as it directly impacts the gross profit (Sales Revenue – COGS).

8. Inventory Errors

Errors in recording inventory can lead to inaccuracies in COGS and net income. An error in ending inventory will affect both COGS and net income for the current period and may also affect the next period's COGS and net income due to the cumulative nature of the error.

- **Overstated Ending Inventory**: COGS will be understated, and net income will be overstated.
- **Understated Ending Inventory**: COGS will be overstated, and net income will be understated.

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9. Key Terms to Know

- **Inventory**
- **Cost of Goods Sold (COGS)**
- **FIFO (First-In, First-Out)**
- **LIFO (Last-In, First-Out)**
- **Weighted Average Cost (WAC)**
- **Lower of Cost or Market (LCM) Rule**
- **Perpetual Inventory System**
- **Periodic Inventory System**
- **Gross Profit**
- **Ending Inventory**

Practice Questions for Chapter 7: Inventory and Cost of Goods Sold

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1. Understanding Inventory Types

Problem 1.1: Classifying Inventory Types

Classify each of the following items as either **Raw Materials Inventory**, **Work-in-Process Inventory**, or **Finished Goods Inventory**:

- Fabric used to make clothing by a clothing manufacturer.
- A completed laptop computer ready for sale at an electronics store.
- Partially assembled bicycle components at a manufacturing plant.

2. Identifying Inventory Systems

Problem 2.1: Identifying Inventory Systems

Which of the following companies would most likely use a **perpetual inventory system**?

- A small retail store that only checks inventory at the end of the year.
- A large grocery store chain with thousands of products, using barcode scanning for each sale.
- A manufacturer of custom-made furniture that only purchases raw materials once per year.

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3. Calculating COGS using FIFO, LIFO, and WAC

Problem 3.1: Calculating COGS with FIFO

Here are the inventory transactions for XYZ Corp. during the month of January:

- Beginning Inventory: 100 units at $5 each
- Purchases: 200 units at $6 each
- Sales: 150 units

Using the **FIFO method**, calculate the **COGS** for the sales and the **ending inventory**.

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4. Calculating COGS using LIFO

Problem 4.1: Calculating COGS with LIFO

For XYZ Corp., here are the inventory transactions during the month of January:

- Beginning Inventory: 100 units at $5 each
- Purchases: 200 units at $6 each
- Sales: 150 units

Using the **LIFO method**, calculate the **COGS** for the sales and the **ending inventory**.

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5. Calculating COGS using Weighted Average Cost (WAC)

Problem 5.1: Calculating COGS with WAC

For XYZ Corp., here are the inventory transactions during the month of January:

- Beginning Inventory: 100 units at $5 each
- Purchases: 200 units at $6 each
- Sales: 150 units

Using the **WAC method**, calculate the **COGS** for the sales and the **ending inventory**. (Round to two decimal places.)

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6. Applying the Lower of Cost or Market Rule

Problem 6.1: Applying the Lower of Cost or Market Rule

XYZ Corp. has 500 units of inventory with a cost of $8 each. The current market value of the inventory has dropped to $7 per unit. According to the **Lower of Cost or Market (LCM)** rule, what is the **value of inventory** to be reported on the balance sheet?

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7. Inventory Errors and their Impact

Problem 7.1: Identifying the Effects of Inventory Errors

ABC Corp. mistakenly overstates its ending inventory by $10,000. What will be the effect on:

- COGS for the current period?
- Net income for the current period?
- Beginning inventory for the next period?

Answers to Practice Questions

Problem 1.1: Classifying Inventory Types

- Fabric used to make clothing → **Raw Materials Inventory**
- Completed laptop → **Finished Goods Inventory**
- Partially assembled bicycle components → **Work-in-Process Inventory**

Problem 2.1: Identifying Inventory Systems

- A large grocery store chain using barcode scanning → **Perpetual Inventory System**

Problem 3.1: FIFO Method Calculation

- **COGS** (FIFO):
  - The first 100 units sold are from the beginning inventory (100 units at $5).
  - 50 additional units are sold from the 200 units purchased at $6 each.
  - COGS = (100 × $5) + (50 × $6) = $500 + $300 = **$800**
  - **Ending Inventory**: 150 units remain (150 units at $6) → $900.

Problem 4.1: LIFO Method Calculation

- **COGS** (LIFO):
  - The first 150 units sold are from the most recent purchases at $6.
  - COGS = (150 × $6) = **$900**
  - **Ending Inventory**: 100 units at $5 each → $500.

Problem 5.1: WAC Method Calculation

- **WAC Calculation**:
  - Total cost = (100 units × $5) + (200 units × $6) = $500 + $1,200 = $1,700.
  - Total units = 100 + 200 = 300 units.

- WAC = $1,700 ÷ 300 units = $5.67 per unit.
- **COGS** = 150 units × $5.67 = **$850.50**
- **Ending Inventory** = 150 units × $5.67 = **$850.50**

Problem 6.1: LCM Rule

- According to LCM, report inventory at the lower of cost or market:
  - Cost per unit = $8
  - Market value per unit = $7
  - **Value of inventory** = 500 units × $7 = **$3,500**

Problem 7.1: Effects of Inventory Errors

- **COGS for the current period**: Will be understated (since ending inventory is overstated).
- **Net income for the current period**: Will be overstated.
- **Beginning inventory for the next period**: Will be overstated (since ending inventory carries over).