# Chapter 8

# COSTING BY-PRODUCTS AND JOINT PRODUCTS

## MULTIPLE CHOICE

**Question Nos. 7, 10, 12-19, and 22 are AICPA adapted.**
**Question No. 25 is ICMA adapted.**
**Question Nos. 11, 20, 23, and 24 are CIA adapted.**

**B** **1.** **The allocation of joint costs to individual products is useful primarily for purposes of:**
- **A. determining whether to produce one of the joint products**
- **B. inventory costing**
- **C. determining the best market price**
- **D. deciding whether to sell at the split-off point**
- **E. evaluating whether an output is a main product or a by-product**

**B** **2.** **The method used for the allocation of joint costs to products is important:**
- **A. only in the minds of accountants**
- **B. because profits will be affected when ending inventories change from the beginning of the period**
- **C. because its validity for justifying prices before regulatory authorities is unquestioned**
- **D. because profit margins differ when the relative sales value method is used**
- **E. for income determination when inventories are nonexistent**

**A** **3.** **In a joint production process, a by-product is also described as:**
- **A. a simultaneously produced product of relatively low value**
- **B. a form of main product with controllable production proportions**
- **C. waste**
- **D. products of low value recovered at the end of a production process**
- **E. a product with no value contribution to help offset production costs**

**D** **4.** **All of the following are methods of costing by-products *except* the:**
- **A. market value method**
- **B. recognition of net revenue method**
- **C. recognition of gross revenue method**
- **D. average unit cost method**
- **E. replacement cost method**

**E** **5.** **Reporting revenue from by-product sales on the income statement as additional sales revenue:**
- **A. allocates costs to by-products on the basis of quantities produced**
- **B. reduces the main product cost by the estimated market value of the by-product**
- **C. credits main product costs only when the by-product is used in further production**
- **D. allocates a proper share of production costs to the by-product**
- **E. overstates ending inventory costs of the main product**

**E** **6.** **All of the following are methods of allocating joint production costs *except* the:**
- **A. market value method**
- **B. quantitative unit method**
- **C. average unit cost method**
- **D. average cost method**
- **E. recognition of net revenue method**

**D** **7.** **Tobin Company manufactures products S and T from a joint process. The market value at split-off was $50,000 for 6,000 units of Product S and $50,000 for 2,000 units of Product T. Assuming that the portion of the total joint cost properly allocated to Product S using the market value method was $30,000, the total joint cost was:**
- **A. $40,000**
- **B. $42,500**
- **C. $45,000**
- **D. $60,000**
- **E. $75,000**

**SUPPORTING CALCULATION:**

$$\frac{\$50{,}000}{\$50{,}000 + \$50{,}000} = .5$$

$$\frac{\$30{,}000}{.5} = \$60{,}000$$

**C** **8.** **Costs to be incurred after the split-off point are most useful for:**
- **A. adjusting inequities in the joint cost allocation procedure**
- **B. determining the levels of joint production**
- **C. assessing the desirability of further processing**
- **D. setting the mix of output products**
- **E. assessing sales realization values for allocating joint costs accurately**

**D 9. Alphabet Company manufactures Products A and B from a joint process that also yields a by-product, X. Alphabet accounts for the revenues from its by-product sales as a deduction from the cost of goods sold of its main products. Additional information is as follows:**

| | A | B | X | Total |
|---|---|---|---|---|
| Units produced..... | 15,000 | 9,000 | 6,000 | 30,000 |
| Joint costs ..... | | | $ 264,000 | |
| Market value at split-off..... | $290,000 | $150,000 | $ 10,000 | $450,000 |

**Assuming that joint product costs are allocated using the market value at the split-off approach, the joint cost allocated to Product B would be:**

**A. $136,540**
**B. $79,200**
**C. $88,000**
**D. $86,591**
**E. $99,000**

**SUPPORTING CALCULATION:**

$$\frac{\$150,000}{\$290,000 + \$150,000} \_ (\$264,000 \bullet \$10,000) = \$86,591$$

**D 10. If a company obtains two salable products from the refining of one ore, the refining process should be accounted for as a(n):**

**A. reduction process**
**B. depletion process**
**C. mixed cost process**
**D. joint process**
**E. extractive process**

**A 11. The assignment of raw material costs to the major end products resulting from refining a barrel of crude oil is best described as:**

**A. joint costing**
**B. differential costing**
**C. incremental costing**
**D. variable costing**
**E. indirect costing**

**B 12. The following components of production that can be allocated as joint costs when a single manufacturing process produces several salable products are:**

**A. indirect production costs only**
**B. materials, labor, and overhead**
**C. materials and labor only**
**D. labor and overhead only**
**E. overhead and materials only**

**A 13. The following statement that best describes a by-product is:**

**A. a product that usually produces a small amount of revenue when compared to the main product's revenue**
**B. a product that does not bear any portion of the joint processing costs**
**C. a product that is produced from material that would otherwise be scrap**
**D. a product that has a lower unit selling price than the main product**
**E. a product created along with the main product whose sales value does not cover its cost of production**

**B 14. Relative sales value at split-off is used to allocate:**

| | Split-Off | Cost Beyond Joint Costs |
|---|---|---|
| **A.** | **yes** | **no** |
| **B.** | **no** | **yes** |
| **C.** | **no** | **no** |
| **D.** | **sometimes** | **never** |
| **E.** | **yes** | **yes** |

**B 15. The following is acceptable regarding the allocation of joint product costs to a by-product:**

| | None Allocated | Some Portion Allocated |
|---|---|---|
| **A.** | **not acceptable** | **not acceptable** |
| **B.** | **acceptable** | **acceptable** |
| **C.** | **acceptable** | **not acceptable** |
| **D.** | **sometimes acceptable** | **never acceptable** |
| **E.** | **not acceptable** | **acceptable** |

**D 16. Idaho Corporation manufactures liquid chemicals A and B from a joint process. Joint costs are allocated on the basis of relative market value at split-off. It costs $4,560 to process 500 gallons of Product A and 1,000 gallons of Product B to the split-off point. The market value at split-off is $10 per gallon for Product A and $14 for Product B. Product B requires an additional process beyond split-off at a cost of $2 per gallon before it can be sold. What is Idaho's cost to produce 1,000 gallons of Product B?**

**A. $5,040**
**B. $4,360**
**C. $4,860**
**D. $5,360**
**E. $3,360**

**SUPPORTING CALCULATION:**

$$\left(\frac{\$14{,}000}{\$14{,}000 + \$5{,}000} \_ \$4{,}560\right) + (\$2 \_ 1{,}000) = \$5{,}360$$

**C 17. Harry Corp. manufactures Products J, K, L, and M from a joint process. Additional information is as follows:**

| Product | Units Produced | Market Value at Split-Off | If Processed Further: Additional Costs | If Processed Further: Market Value |
|---|---|---|---|---|
| J | 6,000 | $ 80,000 | $ 7,500 | $ 90,000 |
| K | 5,000 | 60,000 | 6,000 | 70,000 |
| L | 4,000 | 40,000 | 4,000 | 50,000 |
| M | 3,000 | 20,000 | 2,500 | 30,000 |
| | 18,000 | $ 200,000 | $ 20,000 | $ 240,000 |

**Assuming that total joint costs of $160,000 were allocated using the market value at split-off approach, what joint costs were allocated to each product?**

| | J | K | L | M |
|---|---|---|---|---|
| A. | $53,333 | $44,444 | $35,556 | $26,667 |
| B. | $60,000 | $46,667 | $33,333 | $20,000 |
| C. | $64,000 | $48,000 | $32,000 | $16,000 |
| D. | $60,000 | $48,000 | $32,000 | $20,000 |
| E. | $40,000 | $40,000 | $40,000 | $40,000 |

**SUPPORTING CALCULATION:**

**J: 40% x $160,000 = $64,000**
**K: 30% x $160,000 = $48,000**
**L: 20% x $160,000 = $32,000**
**M: 10% x $160,000 = $16,000**

**E 18. Cayan Company manufactures three main products, F, G, and W, from a joint process. Joint costs are allocated on the basis of relative market value at split-off. Additional information for June production activity follows:**

| | F | G | W | Total |
|---|---|---|---|---|
| Units produced..... | 50,000 | 40,000 | 10,000 | 100,000 |
| Joint costs ..... | ? | ? | ? | $450,000 |
| Market value at split-off..... | $ 420,000 | $ 270,000 | $60,000 | $750,000 |
| Additional costs if processed further ..... | $ 88,000 | $ 30,000 | $12,000 | $130,000 |
| Market value if processed further ..... | $ 538,000 | $ 320,000 | $87,000 | $945,000 |

**Assuming that the 10,000 units of W were processed further and sold for $87,000, what was Cayan's gross profit on this sale?**
**A. $75,000**
**B. $51,000**
**C. $21,000**
**D. $28,500**
**E. $39,000**

**SUPPORTING CALCULATION:**

| | | |
|---|---|---|
| **Sales:** | | **$87,000** |
| **Cost of Goods Sold:** | | |
| **Joint Costs** | **$36,000** | |
| **Separable Costs** | **12,000** | **48,000** |
| **Gross Profit** | | **$39,000** |

**B 19. A company manufactures two joint products at a joint cost of $1,000. These products can be sold at split-off, or when further processed at an additional cost, sold as higher quality items. The decision to sell at split-off or further process should be based on the:**

**A. allocation of the $1,000 joint cost using the quantitative unit measure**
**B. assumption that the $1,000 joint cost is irrelevant**
**C. allocation of the $1,000 joint cost using the relative sales value approach**
**D. assumption that the $1,000 joint cost must be allocated using a physical-measure approach**
**E. allocation of the $1,000 joint cost using any equitable and rational allocation basis**

**D 20. The characteristic that is most often used to distinguish a product as either a joint product or a by-product is the:**

**A. amount of labor used in processing the product**
**B. amount of separable product costs that are incurred in processing**
**C. amount (i.e., weight, inches, etc.) of the product produced in the manufacturing process**
**D. relative sales value of the products produced in the process**
**E. none of the above**

**A 21. A company processes raw material into products F1, F2, and F3. Each ton of raw material produces five units of F1, two units of F2, and three units of F3. Joint processing costs to the split-off point are $15 per ton. Further processing results in the following per unit figures:**

| | F1 | F2 | F3 |
|---|---|---|---|
| **Additional processing costs per unit** | **$28** | **$30** | **$25** |
| **Selling price per unit** | **30** | **35** | **35** |

**If joint costs are allocated by the net realizable value of finished product, what proportion of joint costs should be allocated to F1?**

**A. 20%**
**B. 30%**
**C. 33 1/3%**
**D. 50%**
**E. none of the above**

**SUPPORTING CALCULATION:**

$$\frac{(\$2 \_ 5)}{(\$2 \_ 5)+(\$5 \_ 2)+(\$10 \_ 3)} = 20\%$$

**B** **22.** **Jeffrey Co. manufactures Products A and B from a joint process. Market value at split-off was $700,000 for 10,000 units of A, and $300,000 for 15,000 units of B. Using the market value at split-off approach, joint costs properly allocated to A were $140,000. Total joint costs were:**

**A.** **$98,000**
**B.** **$200,000**
**C.** **$233,333**
**D.** **$350,000**
**E.** **none of the above**

**SUPPORTING CALCULATION:**

$$\frac{\$700,000}{\$700,000 + \$300,000} = .70$$

$$\frac{\$140,000}{.70} = \$200,000$$

**C** **23.** **A company produces three main joint products and one by-product. The by-product's relative market value is quite low compared to that of the main products. The preferable accounting for the by-product's net realizable value is as:**

**A.** **an addition to the revenues of the other products allocated on their respective net realizable values**
**B.** **revenue in the period in which it is sold**
**C.** **a reduction in the joint cost to be allocated to the three main products**
**D.** **a separate net realizable value upon which to allocate some of the joint costs**
**E.** **none of the above**

**C** **24.** **A company manufactures Products X and Y using a joint process. The joint processing costs are $10,000. Products X and Y can be sold at split-off for $12,000 and $8,000 respectively. After split-off, Product X is processed further at a cost of $5,000 and sold for $21,000, whereas Product Y is sold without further processing. If the company uses the market value method for allocating joint costs, the joint cost allocated to X is:**

**A.** **$4,000**
**B.** **$5,000**
**C.** **$6,000**
**D.** **$6,667**
**E.** **none of the above**

**SUPPORTING CALCULATION:**

$$\frac{\$12,000}{\$12,000 + \$8,000} \_ \$10,000 = \$6,000$$

**D** **25.** **The Hovart Corporation manufactures two products out of a joint process—Compod and Ultrasene. The joint (common) costs incurred are $250,000 for a standard production run that generates 120,000 gallons of Compod and 80,000 gallons of Ultrasene. Compod sells for $2.00 per gallon, while Ultrasene sells for $3.25 per gallon. If there are no additional processing costs incurred after the split-off point, the amount of joint cost of each production run allocated to Compod by the quantitative unit method is:**

**A. $100,000**
**B. $120,000**
**C. $130,000**
**D. $150,000**
**E. some amount other than those given above**

**SUPPORTING CALCULATION:**

$$\frac{120{,}000}{120{,}000 + 80{,}000} \times \$250{,}000 = \$150{,}000$$

**A** **26.** **Ace Company produced 20,000 units of Clubs, 15,000 units of Diamonds, and 10,000 units of Hearts. If the company uses the average unit cost method of allocating joint production costs, which were $120,000 for the period, the joint costs allocated to Diamonds would be:**

**A. $40,000**
**B. $20,000**
**C. $80,000**
**D. $45,000**
**E. none of the above**

**SUPPORTING CALCULATION:**

$$\frac{15{,}000}{20{,}000 + 15{,}000 + 10{,}000} \times \$120{,}000 = \$40{,}000$$

**C** **27.** **A company uses the weighted average method to assign joint products. Weight factors used to assign joint costs to its three joint products were: Product A, 4 points; Product B, 7 points; and Product C, 8 points. Units produced were: Product A, 10,000; Product B, 5,000; and Product C, 3,125. The amount of the joint costs of $100,000 that would be allocated to Product C are:**

**A. $42,105**
**B. $17,241**
**C. $25,000**
**D. $30,000**
**E. none of the above**

**SUPPORTING CALCULATION:**

$$\frac{(3{,}125 \times 8)}{(10{,}000 \times 4) + (5{,}000 \times 7) + (3{,}125 \times 8)} \times \$100{,}000 = \$25{,}000$$

**E 28. The two standards in the *Standards of Ethical Conduct for Management Accountants* that pertain most specifically to consideration of joint costs allocation are:**

**A. competence and confidentiality**
**B. confidentiality and integrity**
**C. competence and integrity**
**D. confidentiality and objectivity**
**E. none of the above**

## PROBLEMS

### PROBLEM

**1.**

**Consideration of By-Product in Net Income Determination. Harvard Products Co. manufactures two products—Yalies and Brownies. The Brownies are a by-product from its regular process. During the year, 10,000 Yalies were sold at $8 each. The total production cost was $5 per unit of Yalies, and marketing and administrative expenses totaled $20,000. There were no beginning inventories, but ending inventories amounted to 1,000 units. From the sale of Brownies, the company received $12,000, which was recorded as additional revenue from sales.**

***Required:*** **Prepare an income statement showing the operating income for the year.**

### SOLUTION

**Harvard Products Co.**
**Income Statement**
**For Year Ended December 31, 19--**

| | | |
|---|---|---|
| **Sales: Main product (10,000 Yalies @ $8)** | | **$80,000** |
| **By-product (Brownies)** | | **12,000** |
| **Total sales** | | **$92,000** |
| **Cost of goods sold:** | | |
| **Total production cost (12,000 units[1] @ $5)** | **$60,000** | |
| **Ending inventory (1,000 units @ $5)** | **5,000** | **55,000** |
| **Gross profit** | | **$37,000** |
| **Marketing and administrative expenses** | | **20,000** |
| **Operating income** | | **$17,000** |

[1]

| Sales | + | Ending inventory | - | Beginning inventory | = | Production |
|---|---|---|---|---|---|---|
| 10,000 | + | 1,000 | - | 0 | = | 11,000 |

**PROBLEM**

**2.**

**By-Product Sales in Net Income Determination. Galaxy Flavorings Company produces tea bags. As part of the manufacturing process, the tea leaves are separated from the stalks and stems. The tea leaves are sold as the main product, while the stalks and stems are sold as the by-product for use in nursery mulch. During May, the company processed 25,000 boxes of tea bags at a unit cost of $.75. Beginning inventory consisted of 2,000 boxes at a unit cost of $.70 per box. During May, 20,000 boxes were sold for $1.75 each. The company also sold 500 pounds of stalks and stems at a total price of $850. Marketing and administrative expenses amounted to $12,000.**

***Required:*** **Prepare an income statement showing the operating income for May, assuming that the revenue from the company's by-product sales is deducted from the production costs. (Show unit costs for the ending inventory using the average cost method rounded to three decimal places.)**

**SOLUTION**

**Galaxy Flavorings Company**
**Income Statement**
**For Month Ended May 31, 19--**

| | | | |
|---|---|---|---|
| **Sales: Main product (20,000 boxes @ $1.75)** | | | **$ 35,000** |
| **Cost of goods sold:** | | | |
| **Beginning inventory (2,000 boxes @ $.70)** | | **$ 1,400** | |
| **Total production cost (25,000 boxes @ $.75)** | **$18,750** | | |
| **Revenue from sales of by-product** | **(850)** | **17,900** | |
| **Cost of goods available for sale** | | **$ 19,300** | |
| **Ending inventory (7,000 boxes @ $.746[1])** | | **5,222** | **14,078** |
| **Gross profit** | | | **$ 20,922** |
| **Marketing and administrative expenses** | | | **12,000** |
| **Operating income** | | | **$ 8,922** |

**[1](25,000 x $.75) + (2,000 x $.70)/(20,000 + 7,000) =**
**($18,750 + $1,400)/27,000 =**
**$20,150/27,000 = $.746**

**PROBLEM**

**3.**

**Determination of Ending Inventory; Hypothetical Market Value Method. Macho Inc. manufactures two beverages—Red Eye and Tornado. The production process is such that both beverages are jointly processed in the Basic Blending Department. At the end of the basic blending process, Red Eye is sold at $10 per gallon, but Tornado must be processed at a further cost of $7 per gallon before it can be sold at $15 per gallon. In June, the total joint cost amounted to $96,000, while 5,000 gallons of Red Eye and 12,500 gallons of Tornado were produced. There were no beginning inventories. At the end of June, there were 1,500 gallons of Red Eye and 2,000 gallons of Tornado on hand.**

***Required:*** **Calculate the ending inventory costs for Red Eye and Tornado, using the hypothetical market value method.**

**SOLUTION**

| Product | Ending Inventory (Units) | Unit Costs (per Schedule) | Total Costs |
|---|---|---|---|
| Red Eye | 1,500 | $ 6.40 | $ 9,600 |
| Tornado | 2,000 | 12.12 | 24,240 |
| Ending inventory | | | $ 33,840 |

| Product | Ultimate Market Value per Unit | Units Produced | Ultimate Market Value | Processing Costs After Split-Off |
|---|---|---|---|---|
| Red Eye | $10 | 5,000 | $ 50,000 | 0 |
| Tornado | 15 | 12,500 | 187,500 | $87,500[1] |
| | | | $ 237,500 | $87,500 |

| Hypothetical Market Value | Joint Cost Allocation[2] | Total Production Cost | Unit Cost |
|---|---|---|---|
| $ 50,000 | $32,000 | $ 32,000 | $ 6.40 |
| 100,000 | 64,000 | 151,500 | 12.12 |
| $ 150,000 | $96,000 | $ 183,500 | |

[1] **12,500 units x $7 = $87,500**

[2] **$96,000/$150,000 = 64%, percentage to allocate joint cost**

**PROBLEM**

**4.**

**Joint Cost Allocation—Market Value and Weighted Average Methods. Texarkana Oil Co. produces three joint products: gasoline, kerosene, and naphtha. Total joint production cost for May was $59,500. The units produced and unit sales prices at the split-off point were:**

| Product | Units | Unit Sales Price |
|---|---|---|
| Gasoline | 10,000 | $5 |
| Kerosene | 15,000 | 4 |
| Naphtha | 20,000 | 3 |

**In determining costs by the weighted average method, each unit is weighted as follows:**

| Product | Per Unit Weighting |
|---|---|
| Gasoline | 10.3 |
| Kerosene | 5 |
| Naphtha | 3 |

***Required:*** **Allocate the production cost, using:**

**(1) The market value method**
**(2) The weighted average method**

**SOLUTION**

**(1)**

| Product | Units | Unit Sales Price | Total Market Value | Allocation[1] |
|---|---|---|---|---|
| Gasoline | 10,000 | $5 | $ 50,000 | $ 17,500 |
| Kerosene | 15,000 | 4 | 60,000 | 21,000 |
| Naphtha | 20,000 | 3 | 60,000 | 21,000 |
| | | | $ 170,000 | $ 59,500 |

[1]**$59,500/$170,000 = 35%**

**(2)**

| Product | Units | Per Unit Weighting | Weighted Units | Allocation[2] |
|---|---|---|---|---|
| Gasoline | 10,000 | 10.3 | 103,000 | $ 25,750 |
| Kerosene | 15,000 | 5 | 75,000 | 18,750 |
| Naphtha | 20,000 | 3 | 60,000 | 15,000 |
| | | | 238,000 | $ 59,500 |

[2]**$59,500/238,000 = $.25 per weighted unit**

**PROBLEM**

**5.**
**Market Value Method for By-Products. Flores Inc. manufactures one main product and two by-products. Data for July are:**

| | Main Product | By-Product A | By-Product B | Total |
|---|---|---|---|---|
| Sales | $150,000 | $12,000 | $ 7,000 | $169,000 | |
| Manufacturing cost before separation | | | | | 75,000 |
| Manufacturing cost after separation | | 23,000 | 2,200 | 1,800 | 27,000 |
| Marketing and administrative expense | | 12,000 | 1,500 | 1,100 | 14,600 |

**Profit allowed for By-Product A is 15% of sales and for By-Product B is 20% of sales.**

***Required:***

**(1) Calculate the manufacturing cost before separation that is to be charged to By-Products A and B.**
**(2) Prepare an income statement detailing sales and costs for each product.**

**SOLUTION**

**(1)**

| | A | B |
|---|---|---|
| Sales | $ 12,000 | $7,000 |
| Manufacturing cost after separation | $ 2,200 | $1,800 |
| Marketing and administrative expenses | 1,500 | 1,100 |
| Profit allowance (A, 15%; B, 20%) | 1,800 | 1,400 |
| | $ 5,500 | $4,300 |
| Manufacturing cost before separation | $ 6,500 | $2,700 |

**(2)**

**Flores Inc.**
**Income Statement**
**For July, 19--**

| | Main Product | A | B | Total |
|---|---|---|---|---|
| Sales | $ 150,000 | $ 12,000 | $7,000 | $ 169,000 |
| Cost of goods sold: | | | | |
| Before separation | $ 65,800 | $ 6,500 | $2,700 | $ 75,000 |
| After separation | 23,000 | 2,200 | 1,800 | 27,000 |
| | $ 88,800 | $ 8,700 | $4,500 | $ 102,000 |
| Gross profit | $ 61,200 | $ 3,300 | $2,500 | $ 67,000 |
| Less marketing and administrative expenses | 12,000 | 1,500 | 1,100 | 14,600 |
| Profit from operations | $ 49,200 | $ 1,800 | $1,400 | $ 52,400 |

**PROBLEM**

**6.**
**Joint Cost Analysis for Managerial Decisions. The Conga Company produced three products, C, O, and N, as the result of joint processing which cost $51,700.**

| | C | O | N |
|---|---|---|---|
| **Units produced** | **22,000** | **17,500** | **11,750** |
| **Separable processing costs** | **$ 33,000** | **$ 24,875** | **$ 31,375** |
| **Unit sales price** | **$ 5.50** | **$ 7.25** | **$ 8.50** |

***Required:***

**(1) Allocate the joint cost to the three products using the market value method.**
**(2) Suppose that Product O could be sold at the split-off point for $5.00. Would that be a good idea? Show calculations.**

**SOLUTION**

**(1)**

| Product | Ultimate Market Value per Unit | Units Produced | Ultimate Market Value |
|---|---|---|---|
| **C** | **$5.50** | **22,000** | **$121,000** |
| **O** | **7.25** | **17,500** | **126,875** |
| **N** | **8.50** | **11,750** | **99,875** |
| | | | **$347,750** |

| Processing Cost After Split-Off | Hypothetical Market Value | Apportionment of Joint Production Cost |
|---|---|---|
| **$33,000** | **$ 88,000** | **$17,600*** |
| **24,875** | **102,000** | **20,400** |
| **31,375** | **68,500** | **13,700** |
| **$89,250** | **$ 258,500** | **$51,700** |

*** 51,700 ÷ $258,500 = .20; $88,000 x .20 = 17,600**

**(2)**

| | |
|---|---|
| **Differential revenue [17,500 x (7.25 - 5.00)]** | **$39,375** |
| **Differential cost** | **24,875** |
| **Net effect of separable processing** | **$14,500** |

***Conclusion:*** **Based on the information given, O should be processed beyond the split-off point.**