# Accounting for Financial and Managerial Decision and Control [AFMDC]

Unit 8

## Managerial Accounting for Decision Making: Drop or Continue Decision and Sales or Further Processing Joint Product Decision

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# Contents

- Decision regarding to:
  - Drop or continue
  - Sales or further processing a joint product

# Learning Objectives

- Understand the concept of drop and continue
- Explain the concept of sales or further processing a joint product
- Make decision regarding to:
  - Drop or continue
  - Sales or further processing a joint product decision

# Alternative Decision Questions

- Make or Buy Decision
- Accept or Reject a Special Order Decision
- Drop or Continue Decision
- Sales or Further Processing of Joint Product Decision
- Lease or Purchase Decision

# Drop or Continue Decision

# Concept of Drop or Continue Decision

| | Product A | Product B | Product C | Total |
|---|---|---|---|---|
| **Profit (Loss)** | 5,000 | (3,000) | 2,000 | 4,000 |

# Concept of Drop or Continue Decision

- If a company has a range of products one of which is deemed to be unprofitable, it may consider dropping the item from its range.
- The decision to eliminate an unprofitable product is a special case of product profitability evaluation.
- This type of decision is very much related to profitability.
- An important factor in the decision to drop or continuing a product line is whether it will increase or decrease the future income of the business.
- The income statement, by showing clearly appropriate cost and profit, must be developed for each alternative.
- If the overall profit of the company increases by dropping the product, that product should be dropped. But if the overall profit decreases by dropping, then that product should be continued.

# Key Points

- Objective
  - Profit maximization
- Decision based on income statement (Variable income statement)
- Identify avoidable (relevant) and unavoidable (irrelevant cost), if product drop from product line
- Interlink between the products, if one or more products drop
  - Identify the effect of sales for existing products if we drop product from product line

| | Product A | Product B | Product C | Total |
|---|---|---|---|---|
| **Profit (Loss)** | 5,000 | (3,000) | 2,000 | 4,000 |

# Key Points

- Think about capacity and alternative use of capacity if drop product decision
- Key considerable factors – Capacity utilization
- Capacity utilization
  - Drop and keep capacity idle (unused capacity of drop product)
  - Use capacity to produce new product (identify avoidable cost from drop product and additional cost required for new product)
  - Transfer capacity to other existing product(s) (identify avoidable cost from drop product and additional cost required for capacity transfer)

| | Product A | Product B | Product C | Total |
|---|---|---|---|---|
| **Profit (Loss)** | 5,000 | (3,000) | 2,000 | 4,000 |

# Problem 1

The Bottlers Nepal Ltd; a producer of soft drink, produces three standard products called Coke, Fanta and Soda. The results of the operation for the last year ending 2021 are presented below in an income statement.

| Products/Particulars | Coke | Fanta | Soda | Total |
|---|---|---|---|---|
| Number of Bottles Sold | 10,000 | 10,000 | 5,000 | 25,000 |
| Sales Revenue | Rs. 2,00,000 | Rs. 2,00,000 | Rs 1,00,000 | Rs. 5,00,000 |
| Less: Cost of Production | | | | |
| Direct Material | Rs. 40,000 | Rs. 40,000 | Rs 20,000 | Rs. 1,00,000 |
| Direct Labour | Rs. 40,000 | Rs. 40,000 | Rs 20,000 | Rs. 1,00,000 |
| Manufacturing Overheads | | | | |
| Variable Overhead | Rs. 20,000 | Rs. 20,000 | Rs. 10,000 | Rs. 50,000 |
| Fixed Overhead | Rs. 40,000 | Rs. 40,000 | Rs. 30,000 | Rs. 1,10,000 |
| Total Cost of Production | Rs. 1,40,000 | Rs. 1,40,000 | Rs. 80,000 | Rs. 3,60,000 |
| Gross Margin Available | Rs. 60,000 | Rs. 60,000 | Rs. 20,000 | Rs. 1,40,000 |
| Less: Other Costs | | | | |
| Variable Selling and Adm. Cost | Rs. 10,000 | Rs. 10,000 | Rs. 5,000 | Rs. 25,000 |
| Fixed Selling and Adm. Cost | Rs. 20,000 | Rs. 20,000 | Rs. 20;000 | Rs. 60,000 |
| Total Other Cost | Rs. 30,000 | Rs. 30,000 | Rs. 25;000 | Rs. 85,000 |
| Net Income Before Tax | Rs. 30,000 | Rs. 30,000 | Rs. (5,000) | Rs. 55,000 |

# Problem 1

The result of operation shows product Soda have suffered losses for years, therefore, the management is considering to drop out Soda from its production schedule. If it does so it will be able to avoid all variable costs associated with the product Soda and will be able to reduce its fixed manufacturing overhead cost by Rs. 10,000 as depreciation cost of specialized machine. All other fixed costs are allocated will remain there irrespective of decision but the company will loose its sales of other products by 5%.

**Required**: Should the company drop out Soda?

# Solution 1

The Bottlers Nepal Ltd; a producer of soft drink, produces three standard products called Coke, Fanta and Soda. The results of the operation for the last year ending 2021 are presented below in an income statement.

| Products/Particulars | Coke | Fanta | Soda | Total |
|---|---|---|---|---|
| Number of Bottles Sold | 10,000 | 10,000 | 5,000 | 25,000 |
| Sales Revenue | Rs. 2,00,000 | Rs. 2,00,000 | Rs 1,00,000 | Rs. 5,00,000 |
| Less: Cost of Production | | | | |
| Direct Material | Rs. 40,000 | Rs. 40,000 | Rs 20,000 | Rs. 1,00,000 |
| Direct Labour | Rs. 40,000 | Rs. 40,000 | Rs 20,000 | Rs. 1,00,000 |
| Manufacturing Overheads | | | | |
| Variable Overhead | Rs. 20,000 | Rs. 20,000 | Rs. 10,000 | Rs. 50,000 |
| Fixed Overhead | Rs. 40,000 | Rs. 40,000 | Rs. 30,000 | Rs. 1,10,000 |
| Total Cost of Production | Rs. 1,40,000 | Rs. 1,40,000 | Rs. 80,000 | Rs. 3,60,000 |
| Gross Margin Available | Rs. 60,000 | Rs. 60,000 | Rs. 20,000 | Rs. 1,40,000 |
| Less: Other Costs | | | | |
| Variable Selling and Adm. Cost | Rs. 10,000 | Rs. 10,000 | Rs. 5,000 | Rs. 25,000 |
| Fixed Selling and Adm. Cost | Rs. 20,000 | Rs. 20,000 | Rs. 20;000 | Rs. 60,000 |
| Total Other Cost | Rs. 30,000 | Rs. 30,000 | Rs. 25;000 | Rs. 85,000 |
| Net Income Before Tax | Rs. 30,000 | Rs. 30,000 | Rs. (5,000) | Rs. 55,000 |

# Solution 1

Income statement (Variable costing)

| Products/Particulars | Coke | Fanta | Soda | Total |
|---|---|---|---|---|
| Number of Bottles Sold | 9,500 | 9,500 | 0 | 19,000 |
| Sales Revenue @Rs.20 | Rs. 190,000 | Rs. 190,000 | 0 | 3,80,000 |
| Less: Variable Cost | | | | |
| Direct Material @Rs.4 | 38,000 | 38,000 | 0 | 76,000 |
| Direct Labour @Rs.4 | 38,000 | 38,000 | 0 | 76,000 |
| VMOH @Rs.2 | 19,000 | 19,000 | 0 | 38,000 |
| Variable Selling @Rs.1 | 9,500 | 9,500 | 0 | 19,000 |
| Total VC | 1,04,500 | 1,04,500 | 0 | 2,09,000 |
| Contribution Margin | 85,500 | 85,500 | 0 | 1,71,000 |
| Less: Fixed cost | | | | |
| Fixed Manufacturing Overhead | 40,000 | 40,000 | 20,000 | 1,00,000 |
| Fixed Selling and Adm. Cost | 20,000 | 20,000 | 20;000 | 60,000 |
| Total Fixed Cost | 60,000 | 60,000 | 40,000 | 1,60,000 |
| Net Income Before Tax | 25,500 | 25,500 | (40,000) | 11,000 |

Profit before drop product "Soda" = Rs. 55,000

Profit after drop product "Soda" = Rs. 11,000

Decreased in profit = Rs. 44,000

**Decision:**

The "Soda" product should not be dropped. If drop the product Soda, the net profit is declining by Rs. 44,000.

# Problem 2

The income statement of a multi-product company has been given below:

| Product | A | B | C | Total |
|---|---|---|---|---|
| Capacity Utilization | 40% | 30% | 30% | 100% |
| Units Produced and Sold | 5,000 | 4,000 | 4,000 | 13,000 |
| Sales Revenue | Rs. 4,00,000 | Rs. 2,40,000 | Rs. 2,00,000 | Rs. 8,40,000 |
| Less Variable Cost | Rs. 2,00,000 | Rs. 80,000 | Rs. 1,60,000 | Rs. 4,40,000 |
| Contribution Margin | Rs. 2,00,000 | Rs. 1,60,000 | Rs. 40,000 | Rs. 4,00,000 |
| Less Fixed Cost: | | | | |
| Join Fixed Cost | Rs. 80,000 | Rs. 60,000 | Rs. 60,000 | Rs. 2,00,000 |
| Department Fixed Cost | Rs. 40,000 | Rs. 30,000 | Rs 30,000 | Rs. 1,00,000 |
| Total Fixed Cost | Rs. 120,000 | Rs. 90,000 | Rs. 90,000 | Rs. 3,00,000 |
| Net Income/B.T. | Rs. 80,000 | Rs. 70,000 | Rs. (50,000) | Rs. 1,00,000 |

# Problem 2

Product C, the company has been considering to drop the product and take the following alternatives:

**Alternatives:**

i. To drop product C and keep capacity unutilized and avoids departmental fixed cost by cent percent.

ii. To transfer the available capacity to produce product A and the result will be increase in production of A by 2000 units and increase in department fixed cost by Rs. 40,000.

iii. To transfer the available capacity of C product to produce product B. The result will be increase in production volume by 100% and an increase of variable cost for additional product by Rs. 10 per unit over and above the regular variable cost and increase in department fixed cost by Rs. 20,000.

Required: (a) Should the company drop product C if alternative II & III are not available.

(b) Which of the other two alternatives the company should choose and why?

# Solution 2

i. **Income Statement after Drop Product C and Keep Capacity Unutilized**

| Product | A | B | C | Total |
|---|---|---|---|---|
| Capacity Utilization | 40% | 30% | 0% | 70% |
| Units Produced and Sold | 5,000 | 4,000 | 0 | 9,000 |
| Sales Revenue | Rs. 4,00,000 | Rs. 2,40,000 | 0 | Rs. 6,40,000 |
| Less Variable Cost | 2,00,000 | 80,000 | 0 | 2,80,000 |
| Contribution Margin | 2,00,000 | 1,60,000 | 0 | 3,60,000 |
| Less Fixed Cost: | | | | |
| Join Fixed Cost | 80,000 | 60,000 | 60,000 | 2,00,000 |
| Department Fixed Cost | 40,000 | 30,000 | 0 | 70,000 |
| Total Fixed Cost | 1,20,000 | 90,000 | 60,000 | 2,70,000 |
| Net Income (Loss)/B.T. | 80,000 | 70,000 | (60,000) | 90,000 |
| Net Income Before Drop Out Product C | | | | Rs. 1,00,000 |
| Net Income after Drop Out Product C | | | | Rs. 90,000 |
| Net Decreased in Net Income | | | | Rs. 10,000 |

**Decision:**

Rs.10,000 will decrease the company's net income after drop out the product C from the product line. So the production of product C should be continued to maintain its total profit margin and its market share.

# Solution 2

i. **Income Statement after Drop Product C and Keep Capacity Unutilized**

| Product | A | B | C | Total |
|---|---|---|---|---|
| Capacity Utilization | 40% | 30% | 0% | 70% |
| Units Produced and Sold | 5,000 | 4,000 | 0 | 9,000 |
| Sales Revenue | Rs. 4,00,000 | Rs. 2,40,000 | 0 | Rs. 6,40,000 |
| Less Variable Cost | 2,00,000 | 80,000 | 0 | 2,80,000 |
| Contribution Margin | 2,00,000 | 1,60,000 | 0 | 3,60,000 |
| Less Fixed Cost: | | | | |
| Join Fixed Cost | 80,000 | 60,000 | 60,000 | 2,00,000 |
| Department Fixed Cost | 40,000 | 30,000 | 0 | 70,000 |
| Total Fixed Cost | 1,20,000 | 90,000 | 60,000 | 2,70,000 |
| Net Income (Loss)/B.T. | 80,000 | 70,000 | (60,000) | 90,000 |
| Net Income Before Drop Out Product C | | | | Rs. 1,00,000 |
| Net Income after Drop Out Product C | | | | Rs. 90,000 |
| Net Decreased in Net Income | | | | Rs. 10,000 |

**Decision:**

Rs.10,000 will decrease the company's net income after drop out the product C from the product line. So the production of product C should be continued to maintain its total profit margin and its market share.

# Solution 2

The income statement of a multi-product company has been given below:

| Product | A | B | C | Total |
|---|---|---|---|---|
| Capacity Utilization | 40% | 30% | 30% | 100% |
| Units Produced and Sold | 5,000 | 4,000 | 4,000 | 13,000 |
| Sales Revenue | Rs. 4,00,000 | Rs. 2,40,000 | Rs. 2,00,000 | Rs. 8,40,000 |
| Less Variable Cost | Rs. 2,00,000 | Rs. 80,000 | Rs. 1,60,000 | Rs. 4,40,000 |
| Contribution Margin | Rs. 2,00,000 | Rs. 1,60,000 | Rs. 40,000 | Rs. 4,00,000 |
| Less Fixed Cost: | | | | |
| Join Fixed Cost | Rs. 80,000 | Rs. 60,000 | Rs. 60,000 | Rs. 2,00,000 |
| Department Fixed Cost | Rs. 40,000 | Rs. 30,000 | Rs 30,000 | Rs. 1,00,000 |
| Total Fixed Cost | Rs. 120,000 | Rs. 90,000 | Rs. 90,000 | Rs. 3,00,000 |
| Net Income/B.T. | Rs. 80,000 | Rs. 70,000 | Rs. (50,000) | Rs. 1,00,000 |

Other Method:

| | |
|---|---|
| Contribution Margin available from Product C | Rs. 40,000 |
| Less: Saving on Departmental Fixed Cost after Drop Product C | Rs. 30,000 |
| Net Decreased in Net Income | Rs. 10,000 |

**Decision:**

Rs.10,000 will decrease the company's net income after drop out the product C from the product line. So the production of product C should be continued to maintain its total profit margin and its market share.

# Solution 2

(b) **Calculation of Profit Increase or Decrease under Alternative II and III**

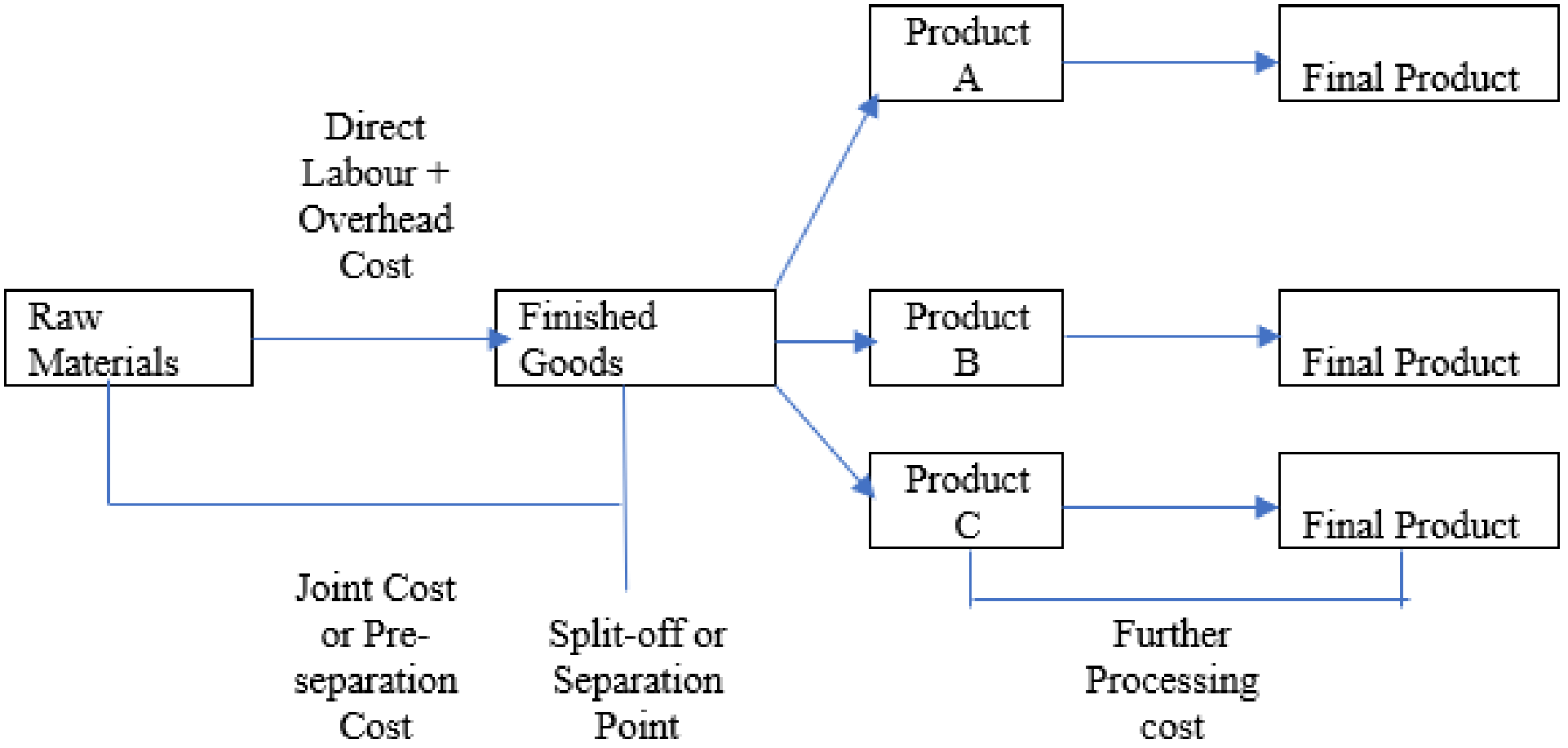
| Alternatives | II | III |
|---|---|---|
| Increase in Sales Units | 2,000 units | 4,000 units |
| Sales Price per Unit | Rs. 80 | Rs. 60 |
| Less: Variable Cost per Unit | 40 | 30 |
| Contribution Margin per Unit | 40 | 30 |
| Increase in Total Contribution Margin | 80,000 | 1,20,000 |
| Add (Less): Others | | |
| Avoidable or Saving Departmental Fixed Cost | 30,000 | 30,000 |
| Contribution Margin Loss due to Drop Product C | (40,000) | (40,000) |
| Increase in Departmental Fixed Cost | (40,000) | (20,000) |
| Total | (50,000) | (30,000) |
| Increase (Decrease) in Profit | 30,000 | 90,000 |

Decision :

In alternative II, the profit is increasing by Rs. 30,000 and in alternative III, the profit is increasing by Rs. 90,000. Hence, alternative III is preferable.

# Sales or Further Processing Joint Product Decision

# Concept of Joint Product(s)




(Source: Author)

# Concept of Joint Product(s)

- When two or more products are manufactured from simultaneously from common inputs or common processing then they are known as Joint Products.

| Industries | Joint products |
|---|---|
| **Oil refineries** | Petrol, Kerosene, fuel oil, paraffin, lubricating oil etc. |
| **Milk product** | Cream, butter, cheese, powder milk, ice-cream etc. |
| **Meat canning** | Hides, canned meat, fertilizers, skin etc. |

# Concept of Joint Product(s)

**Features of joint products**

- Joint products are produced from same basic raw material
- They are produced simultaneously by a common process
- The products have more or less an equal commercial value
- They may require further processing after the point of separation

# Concept of Joint Product(s)

- In addition to joint products, there may be manufacture by-products
- By-product refers to any saleable or usable value incidentally produced in addition to the main product
- By-products are produced along with main products and relatively the by-products have small value
- By-products come up incidentally and unavoidably along with main products

| Industries | Main product | By-products |
|---|---|---|
| **Meat packing industry** | Meat | Bones, fats, hides, hair etc. |
| **Sugar industry** | Sugar | Bagasse, molasses |
| **Cotton ginning** | Cotton fiber | Cotton seeds |
| **Soap making** | Soap | Glycerin |

# Concept of Joint Product(s)

**Characteristics of by-products**

- By-products are come up in the course of manufacturing main products
- It is unavoidably produced and is low value in comparison to main product
- The quality of a by-product is less than the quality of main product
- A by-product may require further processing after it is separated from the main product

# Problem 3

Asian corporation uses a joint process to produce products A, B and C. Each product may be sold at its split-off point or processed further. Additional processing costs are entirely variable and are traceable to the respective products produced. Joint production costs for 2021 were Rs. 50,000. Relevant data with sales value and additional costs if processed further are as follows:

| Products | Units Produced | Sales Value at Split-off (Rs.) | Sales Value after Further Processing (Rs.) | Further Processing Cost (Rs.) |
|---|---|---|---|---|
| A | 20,000 | 45,000 | 60,000 | 20,000 |
| B | 15,000 | 75,000 | 98,000 | 20,000 |
| C | 15,000 | 30,000 | 62,000 | 18,000 |

**Required**: To maximize profits, which products should Asian corporation subject to further processing?

# Solution 3

| | Product A | Product B | Product C |
|---|---|---|---|
| Sales revenue after further processing | 60,000 | 98,000 | 62,000 |
| Sales revenue at split-off point | 45,000 | 75,000 | 30,000 |
| Additional sales revenue after further processing | 15,000 | 23,000 | 32,000 |
| Less: Further processing cost | 20,000 | 20,000 | 18,000 |
| Increase (decrease) in profit after further processing | (5,000) | 3,000 | 14,000 |
| Decision | Sales at split-off point (separation point) | Sales after further processing | Sales after further processing |

# Problem 4

Two separate products emerge from a process as follows:

| | Market Value |
|---|---|
| Product X – 20,000 litres | Rs. 10 per litre |
| Product Y – 50,000 litres | Rs. 3 per litre |

The joint manufacturing costs of this process is Rs. 1,40,000. Management is considering the further processing of product Y, from which would emerge product Z, whose market price is Rs. 6 per litre. The yield of product Z from this new process will be 80% of input, i.e., 40,000 litres. For a study of this problem, management had the following schedules prepared:

Required: Before making its final decision, management calls you in as a consultant to check these figures and to make recommendations. What do you suggest?

Allocation of Joint Costs of Rs. 140,000 on the unit basis:

| | |
|---|---|
| Product X (2/7 of Rs. 140,000) | Rs. 40,000 |
| Product Y (5/7 of Rs. 140,000) | Rs. 100,000 |
| | Rs. 140,000 |

Net Income to be Derived from Product Z:

| | |
|---|---|
| Sales Revenue (40,000 litres @ Rs. 6 per litres) | Rs. 240,000 |
| Cost of Producing Product Z | |
| Allocation of Joint Costs | Rs. 100,000 |
| Additional Processing | Rs. 125,000 |
| Total | Rs. 225,000 |
| Gain from Further Processing Y | Rs. 15,000 |

# Solution 4

| | |
|---|---|
| Revenue from Sale of Y (50,000 units @ Rs. 3) | Rs. 150,000 |
| Revenue from Sale of Z (40,000 units @ Rs. 6) | 240,000 |
| Incremental Revenue | 90,000 |
| Less: Further Processing Cost | 125,000 |
| Net Loss from further processing | (35,000) |

**Decision:**

Incremental revenue is less than further processing cost.
Hence, product Y should not be further processed and sales it at separation point.

# References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# Thank You