Written Exam at the Department of Economics summer 2021

Managerial Accounting

Final Exam

Date 01.06.2021

Solution notes

(3-hour open book exam)

Exercise 1

Q1

The profit statements would be as follows:

	Present			Proposed		
	Amount	Per Unit	%	Amount	Per Unit	%
Sales	9,000,000	600	100 %	9,000,000	600	100 %
Less variable Expenses	6,300,000	420	70	3,600,000	240	40
Contribution margin	2,700,000	180	30 %	5,400,000	360	60 %
Less fixed expenses	1,800,000			4,500,000		
Profit	900,000			900,000		

Q2

	Present	Proposed
Degree of operating Leverage	2,700,000/900.000 =**3**	5,40000/900,000 = **6**

b.

	Present	Proposed
Break-even point in amounts	1,800,000/0.3 = **6,000,000**	4,500,000/0.6 **= 7,500,000**

c.

Margin of safety = Total sales less Break-even sales:

	Present	Proposed
9,000,000 – 6,000,000	**3,000,000**	
9,000,000 – 7,500,000		**1,500,000**

Margin of safety percentage = Margin of safety divided by Total sales:

	Present	Proposed
3,000,000/9,000,000	**33 1/3%**	
1,500,000/9,000,000		**16 2/3%**

Q3

The major factor would be the sensitivity of the company's operations to changes in the economy. In years of strong economic activity, the company will be better off with the new equipment. The reason is that the new equipment will increase the CM ratio, thereby permitting

profits to rise more rapidly in years that sales are strong. However, in periods of economic recession, the company will be worse off with the new equipment. The greater fixed costs created by the new equipment will cause losses to be deeper and sustained more quickly than at present. Thus, management must decide whether the potential for greater profits in good years is worth the risk of deeper losses in bad years.

Q4

Notice that no information is given on either the new variable expenses or the new contribution margin ratio. Both of these items must be determined before the new break-even point can be computed. The computations are:

Sales	=	Variable expenses + Fixed expenses + Profits
10,800,000*	=	Variable expenses + 960,000 + 1,200,000*
8,640,000	=	Variable expenses

* New level of profit: $900,000 \times 1\frac{1}{3} = 1,200,000$

New CM ratio:

Sales	10,800,000	100	%
Less variable expenses	8,640,000	80	
Contribution margin	2,160,000	20	%

With the above data, the new break-even point can be computed:

Fixed expenses/ contribution margin ratio =   960,000/0.20 = **4,800,000**

Exercise 2

Q1

There is no idle capacity, so transfers from the Wood Division to the Box Division would directly affect normal sales of wood to outsiders. Since the costs are the same whether the wood is transferred internally or sold to outsiders, the only relevant cost is the lost revenue of 280 per m3 from the wood that could be sold to outsiders.

Therefore, the Wood division will refuse to transfer at a price less than 280 per m3.

The Box Division can buy wood from an outside supplier for 280 per m3, less a 10% quantity discount of 28, or 252 per m3. Therefore, Division Y would be unwilling to pay more than 252 per m3.

The requirements of the two divisions are incompatible. The Box Division won't pay more than 252 and the Wood Division will not accept less than 280. Thus, there will be no mutually agreeable transfer price and no transfer will take place.

Q2

The price being paid to the outside supplier, net of the quantity discount, is only 252. If this price is met by the Wood Division, then profits in the Wood Division and in the company as a whole will drop by 140,000 per year:

Lost revenue per m3	280
Outside supplier's price	252
Loss in contribution margin per ton	28
Number of m3 per year	5,000
Total loss in profits	**140,000**

Profits in the Box Division will remain unchanged, since it will be paying the same price internally as it is now paying externally.

Q3

There is idle capacity, so transfers from the Wood Division to the Box Division do not cut into normal sales of wood to outsiders. In this case, the minimum price as far as the Box Division is concerned is the variable cost per m3 of 168.

The Box Division can buy wood from an outside supplier for 252 per m3 and would be unwilling to pay more than that for wood in an internal transfer. If the managers understand their own business and are reasonably cooperative, they should agree to a transfer and should settle on a transfer price within the range between **168 and 252.**

Q4

Yes, since the 236 represents an outside price. And the 236 is higher than the Wood Division's 'variable cost' per unit, and therefore will provide some contribution to the Wood Division.

If the Wood Division does not meet the 236 price, it will lose 340,000 in potential profits:

Price per ton	236
Less variable costs	168
Contribution margin per ton	68

5,000 m3 x 68 = 340,000 potential increased profits

This 340,000 in potential profits applies to the Wood Division and to the company as a whole.

Q5

The Box Division should probably be free to go outside and get the best price it can. Even though this would result in suboptimisation for the company as a whole, the purchasing division should probably not be forced to buy inside if better prices are available outside.

The Wood Division will have an increase in profits:

Selling price	280
Less variable costs	168
Contribution margin per m3	112

5,000 tons x 112 = 560,000 increased profits

The Carton Division will have a decrease in profits:

Inside purchase price	280
Outside purchase price	236
Increased cost per ton	44

5,000 m3 x 44 = 220,000 decreased profits

The company as a whole will have an increase in profits:

Increased contribution margin in the Pulp Division	112
Decreased contribution margin in the Carton Division	44
Increased contribution margin per ton	68

5,000 tons x 68 = 340,000 increased profits

So long as the selling division has idle capacity and the transfer price is greater than the selling division's variable costs, profits in the company as a whole will increase if internal transfers are made. However, there is a question of fairness as to how these profits should be split between the selling and purchasing divisions. The inflexibility of management in this situation causes damage to the profits of the Box Division and greatly enhances the profits of the Wood Division.

Exercise 3

This is evaluated on the breadth and depth of the arguments.