

MULTIPLE CHOICE QUESTIONS (40%)

1	C
2	A
3	B
4	B
5	B
6	A
7	D
8	C
9	A
10	B

11	B
12	C
13	B
14	A
15	D
16	B
17	D
18	B
19	A
20	C

Exercise 1 (10%)

Answer:

Contribution per machine hour is calculated as:

Contribution per machine hour = (unit contribution margin) / (machine hours per unit).

Unit contribution margin (CMU) = selling price – unit variable costs.

Unit variable costs, Product A = (\$53 + \$10) = \$63.

CMU, Product A = (\$100 - \$63) = \$37.

Product A’s contribution per machine hour = \$37/2 hours = \$18.50 per hour.

Unit Variable costs, Product B = (\$45 + \$11) = \$56.

The CMU for Product B = (\$80 - \$56) = \$24.

Product B’s contribution per machine hour = \$24/1.5 hours = \$16.00 per hour.

Exercise2 (10%)

Answer:

The initial investment is calculated as follows:

Initial investment = (original cost of equipment) + (change in net working capital) – (proceeds from sales of existing equipment) + (tax effect of disposal of existing equipment)

Increase in accounts receivables = (\$8,000 - \$6,000) = \$2,000

Increase in accounts payables = (\$2,500 - \$2,100) = \$400

Proceeds from sale of existing equipment = \$3,000 (given)

Net book value = original cost – accumulated depreciation

Net book value = \$50,000 - \$45,000 = \$5,000

Tax effect of disposal of existing equipment = (tax rate) (proceeds from sale – net book value)

Tax effect of disposal of existing equipment = (0.4) (\$3,000 – \$5,000) = -\$800

Initial investment = \$95,000 + \$2,000 - \$400 - \$3,000 - \$800 = \$92,800.

Exercise 3 (10%)

Answer:

To calculate the expected NPV of the project, the first step is to calculate the expected annual sales, as follows:

Expected annual sales volume = Σ (annual sales volume) (associated probability)

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Expected annual sales volume = (80,000) (0.1) + (85,000) (0.20) + (90,000) (0.30) + (95,000) (0.20) + (100,000) (0.10) + (110,000) (0.10)

Expected annual sales volume = 8,000 + 17,000 + 27,000 + 19,000 + 10,000 + 11,000

Expected annual sales volume = 92,000

Total margin: (sales) (margin per unit)

The expected margin per year, would then be calculated as:

Expected annual margin = (92,000) (\$5) = \$460,000

The cash flow for each of the five years of the project is calculated as follows:

Cash flow, each year = (contribution margin – depreciation) (1 – tax rate) + depreciation

Depreciation = \$1,000,000 / 5 years = \$200,000 per year

Cash flow, each year = (\$460,000 - \$200,000) (1 - 0.4) + \$200,000

Cash flow, each year = (\$260,000 2) (0.6) + \$200,000 = \$156,000 + \$200,000 = \$356,000

The expected net present value (NPV) of the project can now be calculated:

Expected NPV of the project = (initial investment) + (estimated annual cash flow) (PV factor of annuity, i=12, n=5).

Expected NPV of the project = -\$1,000,000 + (\$356,000)(3.605) = \$283,380.

Exercise 4 (10%)

Answer:

The breakeven point in unites is calculated by solving:

(sales price x volume) – (variable cost per unit x volume) – total fixed costs = \$0

Total fixed costs = Fixed cost per unit x anticipated production volume

Total fixed costs = \$55 x 150,000 units = \$8,250,000

\$160 x units - \$60 x units - \$8,250,000 = \$0

Breakeven points in units = \$8,250,000 / \$100 = 82,500 units

Operating income = (sales price x units) – (variable cost per unit x units) – total fixed costs

Operating income = (\$160 x 175,000 units) – (\$60 x 175,000 units) – \$8,250,000 = \$9,250,000

Exercise 5 (20%)

Required:

1. Compute the return on total assets.
2. Compute the return on common stockholders' equity.
3. Compute the current ratio.
4. Compute the acid-test ratio.
5. Compute the inventory turnover.
6. Compute the average sale period.
7. Compute the debt-to-equity ratio.

1. Return on total assets:

$$\begin{aligned} \text{Return on total assets} &= \frac{\text{Net income} + [\text{Interest expenses} \times (1 - \text{Tax rate})]}{\text{Average total assets}} \\ &= \frac{\$672 + [\$0 \times (1 - 0.36)]}{(\$5,344 + \$4,429) / 2} = 13.8\% \text{ (rounded)} \end{aligned}$$

2. Return on common stockholders' equity:

$$\begin{aligned} \text{Return on a common stockholders' equity} &= \frac{\text{Net income} - \text{Preferred dividends}}{\text{Average common stockholders' equity}} \\ &= \frac{\$672 - \$0}{(\$2,284 + \$2,228) / 2} = 29.8\% \text{ (rounded)} \end{aligned}$$

3. Current ratio:

$$\begin{aligned} \text{Current ratio} &= \frac{\text{Current assets}}{\text{Current liabilities}} \\ &= \frac{\$1,696}{\$2,156} = 0.79 \text{ (rounded)} \end{aligned}$$

4. Acid-test ratio:

$$\begin{aligned} \text{Acid-test ratio} &= \frac{\text{Cash} + \text{Marketable securities} + \text{Accounts receivable} + \text{Short-term notes receivable}}{\text{Current liabilities}} \\ &= \frac{\$281 + \$157 + \$288 + \$0}{\$2,156} = 0.34 \text{ (rounded)} \end{aligned}$$

5. Inventory turnover:

$$\begin{aligned} \text{Inventory turnover} &= \frac{\text{Cost of goods sold}}{\text{Average inventory balance}} \\ &= \frac{\$3,999}{(\$692 + \$636) / 2} = 6.02 \text{ (rounded)} \end{aligned}$$

6. Average sale period:

$$\begin{aligned} \text{Average sale period} &= \frac{365 \text{ days}}{\text{Inventory turnover}} \\ &= \frac{365 \text{ days}}{6.02} = 61 \text{ days (rounded)} \end{aligned}$$

7. Debt-to-equity ratio:

$$\text{Debt-to-equity ratio} = \frac{\text{Total liabilities}}{\text{Stockholders' equity}}$$

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$$= \frac{\$2,156 + \$904}{\$2,284} = 1.34 \text{ (rounded)}$$