35.22 A new piece of equipment costs $100,000 and increases revenue by $15,000 per year for the next 6 years, and by $20,000 per year (from the original baseline) for the following 6 years. Assuming no maintenance costs and no salvage value, what is the present value of investing in this equipment if the effective annual interest rate is 6%?

A. $43,000

B. $56,000

C. $145,000

D. $195,000

Draw a cash flow diagram or make a list of cash flows.

In year zero, there is an initial cost of $100,000 (negative).

In years 1 through 6, there is an annual revenue of $15,000.

In years 7-12, there is an annual revenue of $20,000.

Rather than handle the (6) additional $5,000 cash flows in years 7-12 as individual future cash flows, it is faster to assume and annual revenue of $20,000 for the entire 12 years, then compensate for overstating the revenue in years 1-6 by *subtracting* $5,000 per year over 6 years from the outset. This can be handled as an annualized cash flow over 6 years.

The present value can be determined with the following expression.

$$PV = -\$100,000 + (\$20,000)\,(P/A, 6\%, 12) - (\$5,000)\,(P/A, 6\%, 6)$$

Use the 6% Factor Table to look up the cash flow factors needed to translate the cash flows into present value. Solve for the present value.

$$PV = -\$100,000 + (\$20,000)\,(8.3838) - (\$5,000)\,(4.9173) = \$43,090$$

Answer A