

Chapter 24—Capital Budgeting Decisions

Solutions to Practice Quiz

1. Which of the following statements is *false*?
- a. A basic requirement for a systematic approach to capital budgeting is a defined mission.
  - b. For adequate oversight all capital expenditure proposals should be subject to formal evaluation.
  - c. A post-audit review of approved projects helps to improve the quality of capital expenditure proposals.
  - d. Increasing uncertainty adds to the difficulty of planning as the time horizon increases.

Answer: *b*

Rationale: Not all capital expenditure proposals are subject to formal evaluation. The company might provide guidelines indicating the type and dollar amount of capital expenditures that managers at each level of the organization can make without formal evaluation or committee approval.

**The following tables are presented for use with Questions 2, 3, and 4.**

Periods	Present value of \$1			Present value of an annuity of \$1		
	8%	10%	12%	8%	10%	12%
1	0.926	0.909	0.893	0.926	0.909	0.893
2	0.857	0.826	0.797	1.783	1.736	1.690
3	0.794	0.751	0.712	2.577	2.487	2.402
4	0.735	0.683	0.636	3.312	3.170	3.037

2. Chloe is considering an investment proposal that requires an initial investment of \$88,700, has predicted cash inflows of \$28,000 per year for four years and no salvage value.

At a discount rate of 8 percent the projects net present value is:

- a. \$ 4,036
- b. \$15,256
- c. \$23,300
- d. \$92,736



Answer: *a*

Rationale:

Present value of cash flows = \$28,000 x 3.312 =	\$92,736
Initial investment	<u>(88,700)</u>
Net present value	<u>\$ 4,036</u>

3. The internal rate of return of the investment proposal presented in Question 2 is:

- a. 8 percent
- b. 10 percent
- c. 12 percent
- d. Less than 8 percent

Answer: *b*

Rationale: Present value factor = \$88,700 / \$28,000 = 3.1678

The closest table factor in the row for 4 periods, 3.170, corresponds to a discount rate of 10 percent.

4. The Salt Store is evaluating a capital expenditure proposal with the following predicted cash flows:

Initial investment	\$ (75,000)
Operations, each year for four years	25,000
Salvage	8,000

At a discount rate of 10 percent the project's net present value is:

- a. \$ 4,250
- b. \$ 1,214
- c. \$ 9,714
- d. \$15,178

Answer: *c*

Rationale:

Initial investment	\$ (75,000)
Present value of operating cash flows = \$25,000 x 3.170 =	79,250
Present value of salvage = \$8,000 x 0.683 =	<u>5,464</u>
Net present value	<u>\$ 9,714</u>



5. The payback period of the investment proposal presented in Question 4 is:

- a. 1.55 years
- b. 4.72 years
- c. 3.17 years
- d. 3.00 years

Answer: d

Rationale: Payback period =  $\$75,000 / \$25,000 = \underline{3.00}$  years.

6. The accounting rate of return on the initial investment presented in Question 4 is:

- a. 0.123
- b. 0.110
- c. 0.223
- d. 0.250

Answer: b.

Rationale:

Average annual depreciation =  $(\$75,000 - \$8,000) / 4 = \$16,750$

Average annual increase in net income =  $\$25,000 - \$16,750 = \$8,250$

Accounting rate of return on initial investment =  $\$8,250 / \$75,000 = \underline{0.110}$

7. The accounting rate of return on the average investment presented in Question 4 is:

- a. 0.199
- b. 0.447
- c. 0.404
- d. 0.220

Answer: a

Rationale:

Average annual depreciation =  $(\$75,000 - \$8,000) / 4 = \$16,750$

Average annual increase in net income =  $\$25,000 - \$16,750 = \$8,250$

Average investment =  $(\$75,000 + \$8,000) / 2 = \$41,500$

Accounting rate of return on average investment =  $\$8,250 / \$41,500 = \underline{0.199}$



8. This is a key difference between the internal rate of return and the net present value models.
- a. The net present value method gives explicit consideration to investment size while the internal rate of return model does not.
  - b. The net present value method assumes all net cash inflows are reinvested at the discount rate while the internal rate of return model assumes all net cash inflows are reinvested at the organization's cost of capital.
  - c. The internal rate of return model requires knowledge of an organization's time value of money while the net present value model does not require such knowledge.
  - d. In the absence of a computer, unequal cash flows require more complex computations in the net present value model than in the internal rate of return model.

Answer: a

Rationale: Choice "b" is false because the IRR model assumes all cash flows are reinvested at the projects internal rate of return rather than the cost of capital. Choice "c" is false because the NPV model requires knowledge of a discount rate while the IRR model does not. Choice "d" is false because in the absence of a computer IRR computations are more difficult than NPV computations.

9. Which of the following is an error management should avoid when evaluating proposals for investments in high-tech projects?
- a. Investing in overly complex equipment
  - b. Underestimating incremental sales or cost savings
  - c. Overestimating cost savings
  - d. All of the above

Answer: d

Rationale: All of these items are discussed in the text as possible errors in evaluating proposals for investments in high-tech projects.

10. When determining a project's net present value, the time-adjusted depreciation tax shield is computed as:
- a.  $\text{Depreciation} \times (1 - \text{Tax rate}) \times \text{Present value factor}$
  - b.  $\text{Depreciation} \times (1 - \text{Present value factor}) \times \text{tax rate}$
  - c.  $\text{Depreciation} \times \text{Tax rate} \times \text{Present value factor}$
  - d.  $\text{Depreciation} \times (1 / \text{Tax rate}) \times \text{Present value factor}$

Answer: c

Rationale: The depreciation tax shield is computed as:  $\text{Depreciation} \times \text{Tax rate}$ . The NPV of the depreciation tax shield is:  $\text{depreciation} \times \text{tax rate} \times \text{present value factor}$ .