

## B EXERCISES

(Interest rates are per annum unless otherwise indicated.)

- (LO 3) E6-1B (Using Interest Tables)** For each of the following cases, indicate (a) to what rate columns, and (b) to what number of periods you would refer in looking up the interest factor.

1. In a future value of 1 table:

Annual Rate	Number of Years Invested	Compounded
a. 8%	8	Annually
b. 16%	10	Quarterly
c. 10%	10	Semiannually

2. In a present value of an annuity of 1 table:

Annual Rate	Number of Years Involved	Number of Rents Involved	Frequency of Rents
a. 8%	25	25	Annually
b. 12%	15	30	Semiannually
c. 16%	7	28	Quarterly

- (LO 2, 5) E6-2B (Simple and Compound Interest Computations)** Ho invests \$10,000 at 8% annual interest, leaving the money invested without withdrawing any of the interest for 10 years. At the end of the 10 years, Ho will withdraw the accumulated amount of money.

### Instructions

- (a) Compute the amount Ho would withdraw assuming the investment earns simple interest.
- (b) Compute the amount Ho would withdraw assuming the investment earns interest compounded annually.
- (c) Compute the amount Ho would withdraw assuming the investment earns interest compounded semiannually.

- (LO 5, 6, 7) E6-3B (Computation of Future Values and Present Values)** Using the appropriate interest table, answer each of the following questions. (Each case is independent of the others.)

- (a) What is the future value of \$14,000 at the end of 5 periods at 6% compounded interest?
- (b) What is the present value of \$14,000 due 8 periods hence, discounted at 10%?
- (c) What is the future value of 15 periodic payments of \$14,000 each made at the end of each period and compounded at 8%?
- (d) What is the present value of \$14,000 to be received at the end of each of 20 periods, discounted at 12% compound interest?

- (LO 6, 7) E6-4B (Computation of Future Values and Present Values)** Using the appropriate interest table, answer the following questions. (Each case is independent of the others).

- (a) What is the future value of 20 periodic payments of \$12,000 each made at the beginning of each period and compounded at 6%?
- (b) What is the present value of \$7,500 to be received at the beginning of each of 30 periods, discounted at 8% compound interest?
- (c) What is the future value of 15 deposits of \$6,000 each made at the beginning of each period and compounded at 8%? (Future value as of the end of the fifteenth period.)
- (d) What is the present value of six receipts of \$3,000 each received at the beginning of each period, discounted at 10% compounded interest?

- (LO 6, 7) E6-5B (Computation of Present Value)** Using the appropriate interest table, compute the present values of the following periodic amounts due at the end of the designated periods.

- (a) \$50,000 receivable at the end of each period for 8 periods, compounded at 10%.
- (b) \$50,000 payments to be made at the end of each period for 16 periods at 8%.
- (c) \$50,000 payable at the end of the seventh, eighth, ninth, and tenth periods at 10%.

- (LO 8) E6-6B (Computation of Bond Prices)** What would you pay for a \$500,000 debenture bond that matures in 20 years and pays \$50,000 a year in interest if you wanted to earn a yield of:

- (a) 8%      (b) 10%?      (c) 12%?

## 2 • Chapter 6 Accounting and the Time Value of Money

- (LO 8) E6-7B (Computations for a Retirement Fund)** Hoang, a super salesman contemplating retirement on his fifty-fifth birthday, decides to create a fund on a 10% basis that will enable him to withdraw \$60,000 per year on June 30, beginning in 2014 and continuing through 2017. To develop this fund, Hoang intends to make equal contributions on June 30 of each of the years 2010–2013.

### Instructions

- How much must the balance of the fund equal on June 30, 2013, in order for Hoang to satisfy his objective?
  - What are each of Hoang's contributions to the fund?
- (LO 5) E6-8B (Unknown Rate)** HSU Company purchased a machine at a price of \$200,000 by signing a note payable, which requires a single payment of \$246,420 in 2 years. Assuming annual compounding of interest, what rate of interest is being paid on the loan?
- (LO 5) E6-9B (Unknown Periods and Unknown Interest Rate)** Consider the following independent situations.
- Jafri wishes to accumulate \$2 million. His money market fund has a balance of \$184,592 and has a guaranteed interest rate of 10%. How many years must Jafri leave that balance in the fund in order to get his desired \$2,000,000?
  - Assume that Jones desires to accumulate \$2 million in 15 years using her money market fund of \$365,392. At what interest rate must Jones's investment compound annually?
- (LO 7) E6-10B (Evaluation of Purchase Options)** Loh Excavating Inc. is purchasing a bulldozer. The equipment has a price of \$300,000. The manufacturer has offered a payment plan that would allow Loh to make 10 equal annual payments of \$48,823.59, with the first payment due one year after the purchase.

### Instructions

- How much total interest will Loh pay on this payment plan?
  - Loh could borrow \$300,000 from its bank to finance the purchase at an annual rate of 9%. Should Loh borrow from the bank or use the manufacturer's payment plan to pay for the equipment?
- (LO 8) E6-11B (Computation of Bond Liability)** Loyd Inc. manufactures cycling equipment. Recently the vice president of operations of the company has requested construction of a new plant to meet the increasing demand for the company's bikes. After a careful evaluation of the request, the board of directors has decided to raise funds for the new plant by issuing \$5,000,000 of 11% term corporate bonds on March 1, 2007, due on March 1, 2022, with interest payable each March 1 and September 1. At the time of issuance, the market interest rate for similar financial instruments is 8%.

### Instructions

As the controller of the company, determine the selling price of the bonds.

- (LO 8) E6-12B (Computation of Pension Liability)** Luu, Inc. is a furniture manufacturing company with 50 employees. Recently, after a long negotiation with the local labor union, the company decided to initiate a pension plan as a part of its compensation plan. The plan will start on January 1, 2007. Each employee covered by the plan is entitled to a pension payment each year after retirement. As required by accounting standards, the controller of the company needs to report the pension obligation (liability). On the basis of a discussion with the supervisor of the Personnel Department and an actuary from an insurance company, the controller develops the following information related to the pension plan.

Average length of time to retirement	15 years
Expected life duration after retirement	10 years
Total pension payment expected each year after retirement for all employees; payment made at the end of the year	\$2,800,000 per year

The interest rate to be used is 8%.

### Instructions

On the basis of the information above, determine the present value of the pension obligation (liability).

- (LO 6, 7) E6-13B (Retirement of Debt)** Mejia borrowed \$200,000 on March 1, 2006. This amount plus accrued interest at 10% compounded semiannually is to be repaid March 1, 2016. To retire this debt, Mejia plans to contribute to a debt retirement fund five equal amounts starting on March 1, 2011, and for the next four years. The fund is expected to earn 8% per annum.

### Instructions

How much must Mejia contribute each year to provide a fund sufficient to retire the debt on March 1, 2016?

- (LO 7) E6-14B (Computation of Amount of Rentals)** Your client, Miller Leasing Company, is preparing a contract to lease a machine to Molinar Corporation for a period of 25 years. Miller has an investment cost of

\$250,000 in the machine, which has a useful life of 25 years and no salvage value at the end of that time. Your client is interested in earning a 10% return on its investment and has agreed to accept 25 equal rental payments at the end of each of the next 25 years.

**Instructions**

Provide Miller with the amount of each of the 25 rental payments that will yield a 10% return on investment.

- (LO 5, 7) E6-15B (Least Costly Payoff)** Assume that Muhammed Corporation has a contractual debt outstanding. Muhammed has available two means of settlement: It can either make immediate payment of \$1,500,000, or it can make annual payments of \$200,000 for 10 years, each payment due on the last day of the year.

**Instructions**

Which method of payment do you recommend, assuming an expected effective interest rate of 6% during the future period?

- (LO 7) E6-16B (Notes Payable)** On January 1, 2007, Simmons issued a 10%, 3-year, \$100,000 note to Dykes in exchange for cash. Interest on the note is paid annually on December 31. Simmons must borrow money at an interest rate of 12%.

**Instructions**

(Round journal entries to the nearest dollar.)

- (a) Prepare the journal entry to record the January 1, 2007, transaction on Simmons' books.
  - (b) Prepare the appropriate journal entry on Simmons' books for December 31, 2007, using the effective-interest method.
- (LO 6) E6-17B (Notes Payable)** On January 1, 2007, Grove issued a zero-interest-bearing, 3-year, \$20,000 note to Rommel in exchange for cash. Grove must borrow money at an interest rate of 12%.

**Instructions**

(Round journal entries to the nearest dollar.)

- (a) Prepare the journal entry to record the January 1, 2007, transaction on Grove's books.
  - (b) Prepare the appropriate journal entry on Grove's books for December 31, 2007, using the effective-interest method.
- (LO 6) E6-18B (Purchase of Equipment with Zero-Interest-Bearing Note)** Bishop purchases equipment on January 1, 2007. The company issues a \$50,000, 5-year, zero-interest-bearing note for the new equipment when the market rate of interest for obligations of this nature is 8%. The company will pay off the note in five \$10,000 installments due at the end of each year over the life of the note.

**Instructions**

- (a) Prepare the journal entry(ies) at the date of purchase. (Round to nearest dollar in all computations.)
  - (b) Prepare the journal entry(ies) at the end of the first year to record the payment and interest, assuming that the company employs the effective-interest method.
- (LO 6) E6-19B (Bond Payable)** On January 1, 2007, Bing Corp issued \$500,000 of 6%, 30-year bonds. (Interest is paid annually on December 31.) The market rate of interest is determined to be 4%.

**Instructions**

(Round journal entries to the nearest dollar.)

- (a) Prepare the journal entry to record the January 1, 2007, transaction on Bing's books.
  - (b) Prepare the appropriate journal entry on Bing's books for December 31, 2007, using the effective-interest method.
- (LO 4) E6-20B (Expected Cash Flows)** For each of the following, determine the expected cash flows.

	Cash Flow Estimate	Probability Assessment
<b>(a)</b>	\$2,800	30%
	6,400	40%
	8,500	30%
<b>(b)</b>	\$3,400	40%
	7,100	50%
	7,400	10%
<b>(c)</b>	\$(1,000)	20%
	3,000	70%
	4,000	10%

