- When a bond premium or discount exists, bond interest expense recognized on the statement of comprehensive income is not equal to the amount of cash paid for interest.
- The straight-line method amortizes an equal amount of premium or discount every period.
- When the effective-interest method is used, the amount of interest expense each period is equal to the market rate of interest multiplied by the bond's carrying amount. IFRS requires using the effective-interest method.

Key Terms & Concepts

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Review Problem

Accounting for Long-Term Liabilities

Energy Corporation had the following transactions relating to its long-term liabilities for the year:

a. Issued a $30,000, three-year, 8% note payable to White Corporation for a truck purchased on January 2. Interest is payable annually on December 31 of each year.
b. Issued $300,000 of 12%, 10-year bonds on July 1. The market rate on the date of issuance was 12%. Interest payments are made on June 30 and December 31 of each year.
c. Purchased a warehouse on December 1 by borrowing $250,000. The terms of the mortgage call for monthly payments of $2,194 for 30 years to be made at the end of each month. The interest rate on the mortgage is 10%.

Required:

Make all journal entries required during the year to account for the above liabilities. Energy Corporation reports on a calendar-year basis.

Solution:

Jan. 2	Truck	30,000	
	Note Payable		30,000
	Purchased a truck by issuing a note.		
July 1	Cash	300,000	
	Bonds Payable		300,000
	Issued 12%, 10-year bonds with a face value of $300,000.		
Dec. 1	Warehouse	250,000	
	Mortgage Payable		250,000
	Purchased a warehouse by issuing a 10%, 30-year mortgage.		
31	Interest Expense	2,400	
	Cash		2,400
	Paid yearly interest on the three-year, 8% note ($30,000 × 8% = $2,400).		

31	Bond Interest Expense	18,000	
	Cash		18,000
	Paid semiannual interest payment on 12%, 10-year bonds ($300,000 × 0.12 × ½ = $18,000).		
	Interest Expense	2,083	
	Mortgage Payable	111	
	Cash		2,194
	Paid first monthly payment on 30-year mortgage (interest: $250,000 × 0.10 × 1/12 = $2,083; reduction in principal: $2,194 – $2,083 = $111).		

Put it on Paper — Discussion Questions

1. The higher the interest rate, the lower the present value of a future amount. Why?
2. What is an annuity?
3. When does the stated amount of a liability equal its present value?
4. What is the difference between a note payable and a mortgage payable?
5. When a mortgage payment is made, a portion of it is applied to interest, and the balance is applied to reduce the principal. How is the amount applied to reduce the principal computed?
6. To whom do companies usually sell bonds?
7. What are two important characteristics that determine the issuance price of a bond?
8. Identify four different ways in which bonds can mature or be eliminated as liabilities.
9. If a bond's stated interest rate is below the market interest rate, will the bond sell at a premium or at a discount? Why?
10. If you think the market interest rate is going to drop in the near future, should you invest in bonds?
11. When do you think bonds will sell at or near face value?
12. Explain why bonds retired before maturity may result in a gain or loss to the issuing company.
13. What does the debt ratio measure?
14. From the standpoint of a lender, which is more attractive: a high times interest earned ratio or a low times interest earned ratio? Explain.

Practice Exercises

PE 10-1 LO 1

Present Value of a Single Amount

Jeppson Company will receive $50,000 in five years when the interest rate is 8%. Compute the present value of this payment.

PE 10-2 LO 1

Future Value of a Single Amount

Casciani Company invests $75,000 today in a savings account that earns 10% compounded annually. What will be the balance in the savings account 10 years from today (e.g., future value)?

PE 10-3 LO 1

Interest Rate per Compounding Period

The interest rate is 16% compounded quarterly for six years. Compute the interest rate per compounding period.

PE 10-4 LO 1

Number of Interest Periods

The interest rate is 12% compounded monthly for seven years. Compute the number of interest periods.

PE 10-5 LO 1

Future Value of Single Amount Compounded Monthly

Compute the future value of $16,000 invested today at 12% interest compounded monthly for five years.

PE 10-6 LO 1

Computing the Present Value of an Annuity

Heisman Company will receive $1,600 every six months for eight years. The company's interest rate is 10% compounded semiannually. Compute the present value of this annuity payment.

PE 10-7 LO 1

Computing Periodic Payment Amount

Ellen Company borrowed $80,000 to be repaid in equal monthly installments at 12% interest over five years. Compute the periodic payment amount.

PE 10-8 LO 2

Interest-Bearing Notes

Hornsby Company borrowed $30,000 at 8% interest by issuing a note payable. The terms of the note require yearly interest payments for seven years and repayment of the principal at the end of seven years. Make the necessary journal entries to record the following transactions:

1. Issuance of the note payable
2. Payment of the first interest expense

PE 10-9 LO 2

Mortgages Payable Issuance and First Payment

On January 1, Gorgeous Company borrowed $1,000,000 to purchase a new building and signed a mortgage agreement pledging the building as collateral on the loan. The mortgage is at 10% for 30 years, and the monthly payment is $8,776, payable on January 31 with subsequent payments due at the end of each month thereafter. Make the necessary journal entries to record the following transactions:

1. Acquisition of the mortgage
2. January 31 (first month) payment on mortgage

PE 10-10 LO 2

Mortgages Payable Second Payment

Refer to the data in PE 10-9. Make the necessary journal entry (or entries) to record the second month's mortgage payment on February 28. Round to the nearest penny.

PE 10-11 LO 3

Types of Bonds

Which one of the following statements is *false*?

a. Debentures are bonds that have no underlying assets pledged as collateral to guarantee their payment.
b. Serial bonds mature in one single sum on a specified future date.
c. Callable bonds can be redeemed by the issuer at any time at a specified price.
d. Companies keep a record of the names and addresses of all registered bondholders and pay interest only to those whose names are on file.

PE 10-12 LO 3

Bonds Issued at Face Value

Hulk Company issued 15-year, $100,000 bonds with a stated rate of interest of 8%, compounded quarterly. The effective interest rate demanded by investors for bonds of this level of risk is also 8%. Calculate the issuance price of the bond (e.g., the total present value).

PE 10-13 LO 3

Bonds Issued at a Discount

Forkman Company issued five-year, $25,000 bonds with a stated rate of interest of 8%, compounded semiannually. The effective interest rate demanded by investors for bonds of this level of risk is 12%. Calculate the issuance price of the bond (e.g., the total present value).

PE 10-14 LO 3

Bonds Issued at a Premium

Kelpax Company issued seven-year, $100,000 bonds with a stated rate of interest of 8%, compounded semiannually. The effective interest rate demanded by investors for bonds of this level of risk is 6%. Calculate the issuance price of the bond (e.g., the total present value).

PE 10-15 LO 3

Accounting for Bonds Payable Issued at Face Value

Arisael Company issued 20-year, $800,000 bonds with a stated rate of interest of 9%, compounded semiannually. The effective interest rate demanded by investors for bonds of this level of risk is also

9%. Since these bonds are issued at face value (i.e., the stated rate of interest is equal to the interest rate demanded by investors for bonds of this level of risk), the issuance price is also $800,000. Make the necessary journal entries for the following transactions:
1. Issuance of the bonds
2. First interest payment

PE 10-16 LO 3

Accounting for Retirement of Bonds Payable Issued at Face Value

Refer to the data in PE 10-15. Assuming all interest has been accounted for, make the necessary journal entry (or entries) following transactions to record the retirement of the bonds at the end of 20 years.

PE 10-17 LO 3

Bond Retirements before Maturity

McGregor Company had $300,000 in callable bonds in the open market. The company's bonds were selling in the open market at 105 and were callable at 106. The company decided to retire the bonds early. Make the necessary journal entry (or entries) to record the retirement of these bonds.

PE 10-18 LO 4

Debt Ratio

Using the following information, compute the debt ratio.

Total liabilities	$350,000
Annual interest expense	7,500
Total assets	850,000
Income before interest and taxes	80,000

PE 10-19 LO 4

Debt-to-Equity Ratio

Refer to the data in PE 10-18. Compute the debt-to-equity ratio.

PE 10-20 LO 4

Times Interest Earned Ratio

Refer to the data in PE 10-18. Compute the times interest earned ratio.

EXERCISES

E 10-1 LO 1

Computing the Present Value of a Single Sum

Find the present value (rounded to the nearest dollar) of:
1. $60,000 due in 4 years at 6% compounded annually.
2. $15,000 due in 6½ years at 4% compounded semiannually.
3. $76,000 due in 5 years at 16% compounded quarterly.
4. $85,000 due in 25 years at 10% compounded semiannually.

E 10-2 LO 1

Computing the Future Value of a Single Sum

Compute the future value (rounded to the nearest dollar) of the following investments:
1. $15,842 invested to earn interest at 6% compounded annually for 4 years.
2. $30,920 invested to earn interest at 4% compounded semiannually for 6½ years.
3. $6,846 invested to earn interest at 16% compounded quarterly for 5 years.
4. $959 invested to earn interest at 10% compounded semiannually for 25 years.

E 10-3 LO 1

Computing the Present Value of an Annuity

What is the present value (rounded to the nearest dollar) of an annuity of $50,000 per year for five years if the interest rate is:
1. 8% compounded annually
2. 10% compounded annually

E 10-4 LO 1

Computing the Amount of Periodic Payments

Howard Company has just borrowed $250,000. The loan is to be repaid in regular annual payments made at the end of each year. What is the amount of each annual payment under the following sets of terms:

1. Interest rate of 8% compounded annually; repayment in four annual payments
2. Interest rate of 7% compounded annually; repayment in eight annual payments

---

E 10-5 LO 4

Evaluation of Statements about Bonds

Alan Crawford has prepared the following list of statements about bonds.

1. When seeking long-term financing, an advantage of issuing ordinary shares over issuing bonds is tax savings result.
2. The rate used to determine the amount of cash interest that the borrower pays is called the stated rate.
3. Bond prices are usually quoted as a percentage of the face value of the bond.
4. The present value of a bond is the value at which it should sell in the marketplace.

Required:

Identify each statement as true or false. If false, indicate how to correct the statement.

E 10-6 LO 2

Accounting for Long-Term Note Payable

Maloney Company borrowed $60,000 on a two-year, 8% note dated October 1, 2017. Interest is payable annually on October 1, 2018, and October 1, 2019, the maturity date of the note. The company prepares its financial statements on a calendar-year basis. Prepare all journal entries relating to the note for 2017, 2018, and 2019.

E 10-7 LO 2

Accounting for Long-Term Note Payable

Silmaril, Inc., borrowed $500,000 from First National Bank by issuing a three-year, 10% note dated July 1, 2017. Interest is payable semiannually on December 31 and June 30. The principal amount is to be repaid in full on June 30, 2020. Silmaril, Inc., reports on a calendar-year basis. Prepare all journal entries relating to the note during 2017, 2018, 2019, and 2020.

E 10-8 LO 2

Accounting for a Mortgage

Kohler Kleaners borrowed $50,000 on June 1, 2018, to finance the purchase of a building. The mortgage requires payments of $525 to be made at the end of every month for 12 years with the first payment being due on June 30, 2018. The interest rate on the mortgage is 8%.

1. Prepare a mortgage amortization schedule for 2018.
2. How much interest will be paid in 2018?
3. By how much will the principal amount of the mortgage be reduced by the end of 2018?

E 10-9 LO 2

Accounting for a Mortgage

On January 1, 2018, Paik, Inc., borrowed $250,000 to finance the purchase of machinery. The terms of the mortgage require payments to be made at the end of every month with the first payment being due on January 31, 2018. The length of the mortgage is five years, and the mortgage carries an interest rate of 12%.

1. Compute the amount of the monthly payment.
2. Prepare a mortgage amortization schedule for 2018.
3. Prepare the journal entry to be made on January 31, 2018, when the first payment is made.
4. For the remainder of the year, how will the journal entries relating to the mortgage differ from the one made on January 31, 2018?

E 10-10 LO 2

Accounting for Interest-Bearing Notes

DSMC Inc. had the following transactions involving notes payable.

July 1, 2017	Borrows $50,000 from Western Bank by signing a 9-month, 8% note.
Nov. 1, 2017	Borrows $42,000 from City Bank by signing a 3-month, 7% note.
Dec. 31, 2017	Prepares adjusting entries.
Feb. 1, 2018	Pays principal and interest to City Bank.
Apr. 1, 2018	Pays principal and interest to Western Bank.

Required:

Prepare journal entries for each of the transactions.

E 10-11 LO 3

Issuance Price of Bonds

Neukoelln Company issued six-year bonds on January 1. The face value of the bonds is $160,000. The stated interest rate on the bonds is 10%. The market rate of interest at the time of issuance was 8%. The bonds pay interest semiannually. Calculate the issuance price of the bonds.

E 10-12 LO 3

Issuance Price of Bonds

Hopeful Company issued seven-year bonds on January 1. The face value of the bonds is $100,000. The stated interest rate on the bonds is 7%. The market rate of interest at the time of issuance was 10%. The bonds pay interest semiannually. Calculate the issuance price of the bonds.

E 10-13 LO 3

Accounting for Bonds Issued at Face Value

Romulus, Inc., issued $500,000 of 10%, five-year bonds at face value on July 1, 2017. Interest on the bonds is payable semiannually on December 31 and June 30.

1. Provide the journal entry to record the issuance of the bonds on July 1, 2017.
2. Provide the journal entry made on December 31, 2017, to account for these bonds.
3. On September 30, 2018, Romulus elected to retire the bonds early. The market price of the bonds on this date was $486,000. Provide the journal entries to record the early retirement.
4. Why do you think Romulus elected to retire the bonds early?

E 10-14 LO 3

Accounting for Bonds Issued at Face Value

Eagles Company issued $280,000 of 9%, 10-year bonds at face value on September 1, 2017. The bonds pay interest on March 1 and September 1. Eagles uses the calendar year for financial reporting purposes.

1. Provide the journal entry to record the bond issuance on September 1, 2017.
2. Provide the journal entry to record interest expense on December 31, 2017.
3. Provide the journal entries made during 2018 relating to the bond.
4. On February 20, 2019, Eagles elected to retire the bond issue early. The market price on the day of retirement was $300,000. Provide the journal entries to record the bond retirement.
5. Why do you think Eagles elected to retire the bonds early?

E 10-15 LO 4

Computation of Debt-Related Financial Ratios

The following information comes from the financial statements of Glay Company:

Long–term debt	$65,000
Total liabilities	90,000
Total equity	60,000
Operating income	25,000
Interest expense	18,000

Required:

Compute the following ratio values:

1. Debt ratio
2. Debt-to-equity ratio
3. Times interest earned

E 10-16 LO 4

Discussing the Impact of Unrecorded Obligations on Liquidity and Solvency

Suppose Swarlie Ltd.'s 2018 financial statements contain the following selected data (in millions).

Current assets	NT$ 3,500
Total assets	30,000
Current liabilities	3,000
Total liabilities	16,000

Interest expense	NT$ 475
Income taxes	1,950
Net income	4,500

Required:

1. Compute the following values and provide a brief interpretation of each.
   a. Working capital.

b. Current ratio.
c. Debt-to-assets ratio.
d. Times interest earned.

2. Suppose the notes to Swarlie's financial statements show that subsequent to 2018, the company will have future minimum lease payments under operating leases of NT$10,700 million. If these assets had been purchased with debt, assets and liabilities would rise by approximately NT$7,500 million. Recompute the debt-to-assets ratio after adjusting for this. Discuss your result.

PROBLEMS

P 10-1 LO 1

Present and Future Value Computations

Required:

1. Determine the present value in each of the following situations:
   a. A $15,000 loan to be repaid in full at the end of five years. Interest on the loan is payable quarterly. The interest rate is 8% compounded quarterly.
   b. A six-year note for $12,000 bearing interest at an annual rate of 12%, compounded semiannually. Interest is payable semiannually.
   c. A one-year mortgage to be paid in monthly installments of $7,000. The interest rate is 12% compounded monthly.
2. Determine the future value in each of the following situations:
   a. An investment of $20,000 today to earn interest at 8% compounded semiannually to provide for a down payment on a house four years from now.
   b. An investment of $60,000 today to earn interest at 12% compounded quarterly that is designated for a charitable contribution 15 years from now when the donor retires.

P 10-2 LO 1

Present and Future Value Computations

Required:

1. Compute the present value for each of the following situations, assuming an interest rate of 10% compounded annually. (Round amounts to the nearest dollar.)
   a. A single payment of $30,000 due on a mortgage five years from now.
   b. A series of payments of $6,000 each, due at the end of each year for five years.
   c. A five-year, 10% loan of $25,000, with interest payable annually, and the principal due in five years.
2. Compute the future value amounts (rounded to the nearest dollar) in each of the following situations:
   a. A $20,000 lump-sum investment today that will earn interest at 10% compounded annually over five years.
   b. A $8,000 lump-sum investment today that will earn interest at 8%, compounded quarterly to provide money for a child's college education 15 years from now.

P 10-3 LO 1

Computing the Amount of Periodic Payments

Nathan Smith has just purchased a new car for $28,000. He paid $8,000 down and signed a note for the remaining $20,000. The interest rate on the note is 12% compounded monthly, or 1% per month.

Required:

1. Compute the amount of Mr. Smith's monthly payment if he plans to pay off the $20,000 note in 30 monthly payments. Remember: The interest rate is 1% per month.
2. Repeat part (1) assuming that Mr. Smith wishes to repay the note in 60 monthly payments.
3. Assume that Mr. Smith decides to repay the note in 60 monthly payments. What is the balance remaining on the note immediately after he makes the 30th payment? *Hint:* Compute the present value of the remaining 30 payments.

P 10-4
LO 2

Accounting for Notes Payable

Sweet's Candy Company needed cash for its current business operations. On January 1, 2017, the company borrowed $8,000 on a two-year, interest-bearing note from Peterson Bank at an annual interest rate of 10%. Interest is payable annually on January 1, and the note matures January 1, 2019. Sweet's Candy Company also borrowed $4,500 from Laurence National Bank on January 1, 2017, signing a three-year, 11% note due on January 1, 2020, with interest payable annually on January 1.

Required:

Prepare all journal entries relating to the two notes for 2017, 2018, 2019, and 2020. Assume that Sweet's Candy Company uses the calendar year for financial reporting. (Round all amounts to the nearest dollar.)

P 10-5
LO 2

Accounting for Notes Payable

During 2017, Yuki Corporation had the following transactions relating to long-term liabilities:

May 1 Purchased a machine costing $600,000 from Kuma Corporation. Issued a three-year, interest-bearing note with interest payable on May 1 of each year. The note matures on May 1, 2020, and carries an interest rate of 7%.

July 1 Borrowed $25,000 from South-Central National Bank. The terms of the note require semiannual payments of interest on December 31 and June 30. The note matures in two years and carries an interest rate of 6%.

Required:

1. Prepare the journal entries made on May 1 and July 1 to record the issuance of these two notes.
2. Prepare all journal entries made on December 31, 2017.
3. Prepare all journal entries made during 2018.

P 10-6
LO 2

Accounting for a Mortgage

On November 1, 2018, Nydegger Company arranges with an insurance company to borrow $400,000 on a 30-year mortgage to purchase land and a building to be used in its operations. The land and the building are pledged as collateral for the loan, which has an annual interest rate of 12%, compounded monthly. The monthly payments of $4,114 are made at the end of each month, beginning on November 30, 2018.

Required:

1. Prepare the journal entry to record the purchase of the land and building, assuming that $75,000 of the purchase price is assignable to the land.
2. Prepare the journal entries on November 30 and December 31 for the monthly payments on the mortgage.
3. **Interpretive Question:** Explain generally how the remaining liability at December 31, 2018, will be reported on the company's balance sheet dated December 31, 2018.

P 10-7
LO 3

Issuance Price of Bonds

Patterson Company issued 30-year bonds on June 30. The face value of the bonds was $750,000. The stated interest rate on the bonds was 6%. The market rate of interest at the time of issuance was 4%. Patterson also issued another set of bonds on August 31. These bonds were 20-year bonds and had a face value of $556,000. The stated rate of interest on these bonds was 5%. The market rate of interest at the time these bonds were issued was 8%. Both sets of bonds pay interest semiannually.

Required:

Calculate the issuance price of these bonds.

P 10-8
LO 3

Accounting for Bonds

On July 1, 2017, Paramount, Inc., issued $500,000, 8%, 30-year bonds with interest paid semiannually on January 1 and July 1. The bonds were sold when the market rate of interest was 8%. On October 1, 2020, the bonds were retired when their fair market value was $495,000.

Required:

1. Demonstrate, using the present value tables, that the bonds were sold for $500,000.
2. Provide the journal entry made on July 1 to record the issuance of the bonds.
3. Provide the journal entry made on December 31, 2017, relating to interest.
4. Provide the journal entries to record the retirement of the bonds.

P 10-9

LO 3

Accounting for Bonds

Lihue Enterprises issued $1.5 million, 9%, 20-year bonds on November 1, 2017. Interest payment dates are May 1 and November 1. The bonds were sold at face value.

Required:

1. Provide the journal entry to record the initial issuance of the bonds.
2. Provide the required journal entry on December 31, 2017.
3. Provide all journal entries relating to the bonds made during 2018.

P 10-10

LO 3

Accounting for Bond Interest Payments, Premium Amortization, and Redemption

The following is taken from the TED Inc. balance sheet.

TED Inc.
Balance Sheet (partial)
December 31, 2017

Non-current liabilities	
Bonds payable (face value $4,000,000), 7% due January 1, 2028	$4,240,000
Current liabilities Interest payable (for 12 months from January 1 to December 31)	280,000

Interest is payable annually on January 1. The bonds are callable on any annual interest date. TED uses straight-line amortization for any bond premium or discount. From December 31, 2018, the bonds will be outstanding for an additional 10 years (120 months).

Required:

1. Journalize the payment of bond interest on January 1, 2018.
2. Prepare the entry to amortize bond premium and accrue the interest due on December 31, 2018.
3. Assume that on January 1, 2019, after paying interest, TED calls bonds having a face value of $1,200,000. The call price is 101. Record the redemption of the bonds.
4. Prepare the adjusting entry on December 31, 2019 to amortize bond premium and to accrue interest on the remaining bonds.

P 10-11

LO 4

Reporting Liabilities on the Balance Sheet

The following list of accounts is taken from the adjusted trial balance of Goforth Company.

Accounts Payable	$48,000
Notes Payable (due in 6 months)	24,000
Income Taxes Payable	18,000
Unearned Sales Revenue	32,000
Notes Payable (due in 2 years)	40,000
Prepaid Insurance	7,500
Accounts Receivable	35,000
Current Portion of Mortgage Payable	12,300
Mortgage Payable (due beyond 1 year)	93,000
Retained Earnings	96,350
Property Taxes Payable	8,700
Salaries and Wages Payable	15,200
Sales Tax Payable	2,500

Required:

Prepare the liabilities section of the company's balance sheet.

P 10-12

LO 4

Computation of Debt-Related Financial Ratios

The following information comes from the financial statements of Walker Company:

Long-term debt	$360,000
Total liabilities	540,000
Total stockholders' equity	480,000
Current assets	360,000
Earnings before income taxes	50,000
Interest expense	78,000

Required:

Compute the following ratio values. State any assumptions that you make.

1. Debt ratio
2. Debt-to-equity ratio
3. Times interest earned
4. **Interpretive Question:** You are a bank manager considering making a new $35,000 loan to Walker that would replace part of the existing long-term debt. You expect Walker to repay your loan in two years. Which of the ratios computed in parts (1) through (3) would be most useful to you in evaluating whether to make the loan to Walker?

ANALYTICAL ASSIGNMENTS

AA 10-1

Judgment Call

***You Decide:* If a young company has a negative "times interest earned" ratio, should the company be refused or given a loan by lenders?**

Design Arts, Inc. is a young computer game design company that has been in business for two years. The company has been working on a computer game that is scheduled for release in six months. However, it has exhausted all its financial resources and needs one last loan of $100,000 to help it meet its deadline. The company has not had any revenues up to this point but knows that once the game hits the market, it will be extremely profitable. Would you make a loan to this company?

AA 10-2

Real Company Analysis

Carrefour

Locate the 2015 financial statements of Carrefour in Appendix C and consider the following questions:

1. Examine Carrefour's balance sheet as of January 31, 2015. What percent of the increase in Carrefour's total assets from 2014 to 2015 was financed with an increase in the company's long-term borrowings?
2. Compute Carrefour's debt ratio for 2014 and 2015. Is the ratio increasing or decreasing? Identify the primary reason for the change.

AA 10-3

Real Company Analysis

IBM

International Business Machines (IBM) included the following information in Note J to its 2015 financial statements:

Long-Term Debt
At December 31, 2015
($ in millions)

At December 31:	Maturities	2015	2014
U.S. dollar notes and debentures (average interest rate at December 31, 2015):			
2.80%	2016–2017	$ 9,351	$ 9,254
3.34%	2018–2019	7,591	6,835
1.46%	2020–2021	3,717	6,555
2.35%	2022	1,900	1,000
3.38%	2023	1,500	1,500
3.63%	2024	2,000	2,000
7.00%	2025	600	600
6.22%	2027	469	469
6.50%	2028	313	313
5.88%	2032	600	600
8.00%	2038	83	83
5.60%	2039	745	745
4.00%	2042	1,107	1,107
7.00%	2045	27	27
7.13%	2096	316	316
		$30,319	$31,404

At December 31:	Maturities	2015	2014
Other currencies (average interest rate at December 31, 2015, in parentheses):			
Euros (1.8%)	2016–2025	$ 4,892	$ 5,463
Pound sterling (2.7%)	2017–2022	1,555	1,176
Japanese yen (0.4%)	2017–2022	1,180	733
Swiss francs (6.3%)	2020	9	162
Canadian (2.2%)	2017	360	432
Other (13.8%)	2016–2020	506	367
		$38,820	$39,737
Less: net unamortized discount		838	853
Less: net unamortized debt issuance costs		74	83
Add: fair value adjustment		790	792
		38,699	39,593
Less: current maturities		5,271	4,601
Total		$33,428	$34,991

Required:

1. IBM lists fifteen different issues of notes and debentures. What is a debenture?
2. What is unusual about the 7.13% debentures?
3. IBM has borrowed the equivalent of $8.502 billion in the form of foreign currency loans. Why would IBM get loans denominated in foreign currencies rather than get all of its loans in U.S. dollars?
4. The average interest rates on the foreign currency loans range from a low of 0.4% for loans of Japanese yen to 13.8% for loans of other currencies. What factors would cause IBM to pay a higher interest rate when it borrows other currencies than when it borrows Japanese yen?

EXPANDED MATERIAL

Key Terms & Concepts

- bond carrying amount, 436
- effective-interest amortization, 435
- straight-line amortization, 435

Review Problem

Bonds Payable

Scientific Engineering Company received authorization on July 1, 2017, to issue $300,000 of 12% bonds. The maturity date of the bonds is July 1, 2037. Interest is payable on January 1 and July 1 of each year. The bonds were sold for $289,200 on July 1, 2017 (the same day as authorized). Scientific Engineering uses straight-line amortization.

Required:

1. Compute the approximate effective interest rate for the bonds.
2. Record the journal entries on:
   a. July 1, 2017
   b. December 31, 2017
   c. January 1, 2018
   d. July 1, 2018
   e. December 31, 2018
3. Record the journal entries on July 1, 2037, for the final interest payment and the retirement of the bonds.

Solution:

1. Effective Interest Rate

Because the bonds sold at a discount, the actual or effective rate of interest is higher than the stated interest rate of 12%. The effective interest rate can be approximated as follows:

Bond discount amortized per year = $10,800/20 periods = $540
Annual interest expense = ($300,000 × 12%) + $540 = $36,540
Effective interest rate = $36,540/$289,200 = 12.63%

2. Journal Entries

a. July 1, 2017	Cash	289,200	
	Discount on Bonds Payable	10,800	
	Bonds Payable		300,000
	To record the sale of $300,000 of 12% bonds due on July 1, 2037.		
b. Dec. 31, 2017	Bond Interest Expense	18,270	
	Discount on Bonds Payable		270
	Bond Interest Payable		18,000
	To record semiannual bond interest expense on $300,000, 12%, 20-year bonds ($300,000 × 0.12 × ½ year) and amortize bond discount ($10,800 ÷ 20 years × ½ year).		
c. Jan. 1, 2018	Bond Interest Payable	18,000	
	Cash		18,000
	Paid semiannual interest on $300,000 bonds.		
d. July 1, 2018	Bond Interest Expense	18,270	
	Discount on Bonds Payable		270
	Cash		18,000
	Paid semiannual interest on $300,000 bonds and amortized bond discount.		
e. Dec. 31, 2018	Bond Interest Expense	18,270	
	Discount on Bonds Payable		270
	Bond Interest Payable		18,000
	To record semiannual bond interest expense on $300,000 bonds and amortize bond discount.		

3. Retirement of the Bonds

July 1, 2037	Bond Interest Expense	18,270	
	Discount on Bonds Payable		270
	Bond Interest Payable		18,000
	To record the bond interest expense and discount amortization up to the date of maturity.		
	Bonds Payable	300,000	
	Bond Interest Payable	18,000	
	Cash		318,000
	To record the payment of interest for six months and retire the bonds at maturity.		

The first entry on July 1, 2037, updates the amortization of the bond discount to the retirement date and reflects the cash owed for interest for the period January 1–July 1, 2037. The second entry reflects payment for retiring the bonds plus payment of the interest owed. Alternatively, Cash could have been credited for $18,000 in the first entry. If Cash had been credited, the second entry would have included only a debit to Bonds Payable and a credit to Cash for $300,000.

Put it on Paper DISCUSSION QUESTIONS

15. What type of account is Discount on Bonds Payable?
16. Why does the amortization of a bond discount increase the carrying amount of bonds?
17. Why is the effective-interest amortization method more theoretically appropriate than the straight-line amortization method?
18. What is the carrying amount of a bond?
19. How does the carrying amount of a bond affect the accounting for bonds payable under the effective-interest method?
20. If the effective rate of interest for a bond is greater than its stated rate of interest, explain why the annual bond interest expense will be different from the periodic cash interest payments to the bondholders.

EXERCISES

E 10-17
LO 3
LO 5

Accounting for Bonds Issued at a Discount

Kontiki Alarm Company issued $500,000 of 10%, five-year bonds at 98 on June 30, 2017. Interest is payable on June 30 and December 31. The company uses the straight-line method to amortize bond premiums and discounts. The company's fiscal year is from February 1 through January 31.

Prepare all necessary journal entries to account for the bonds from the date of issuance through June 30, 2018. Also record the retirement of the bonds on June 30, 2022, assuming that all interest has been paid and that the discount has been fully amortized.

E 10-18
LO 3
LO 5

Accounting for Bonds Issued at a Premium

Sealon Corporation issued $100,000 of 10%, 10-year bonds at 102 on April 1, 2018. Interest is payable semiannually on April 1 and October 1. Sealon Corporation uses the calendar year for financial reporting.

1. Record the necessary entries to account for these bonds on the following three dates. (Use the straight-line method to amortize the bond premium.)
   a. April 1, 2018
   b. October 1, 2018
   c. December 31, 2018
2. Show how the bonds would be reported on the balance sheet of Sealon Corporation on December 31, 2018.

E 10-19 LO 5

Effective-Interest Calculation

Determine the *approximate* effective rate of interest for $675,000, 9%, three-year bonds issued at 98. (Assume straight-line amortization.)

E 10-20 LO 5

Bond Amortization Schedule

The following is a partially completed amortization schedule prepared for the KAVA Company to account for its three-year bond issue with a face value of $50,000. The schedule covers the first three semiannual interest payment dates. Amounts are rounded to the nearest dollar. Compute the missing numbers.

Year	Interest Paid	Bond Expense	Premium Amortized	Bonds Payable Carrying Amount
0				$52,537
½	(1)	$2,627	(2)	52,164
1	$3,000	(3)	$392	(4)
1½	(5)	(6)	(7)	(8)

E 10-21 LO 3 LO 5

Accounting for Bonds

Brown & Co., a calendar-year firm, is authorized to issue $700,000 of 11%, 15-year bonds dated May 1, 2017, with interest payable semiannually on May 1 and November 1.

Amortization of bond premiums or discounts is recorded using the straight-line amortization method. Prepare journal entries to record the following events, assuming that the bonds are sold at 97 on May 1, 2017.

1. The bond issuance on May 1, 2017
2. Payment of interest on November 1, 2017
3. Adjusting entry on December 31, 2017
4. Payment of interest on May 1, 2018

PROBLEMS

P 10-13 LO 3 LO 5

Accounting for Bonds

Nemo Company authorized and sold $90,000 of 10%, 15-year bonds on April 1, 2018. The bonds pay interest each April 1, and Nemo's year-end is December 31.

Required:

1. Prepare journal entries to record the issuance of Nemo Company's bonds under each of the following three assumptions:
   a. Sold at 97
   b. Sold at face value
   c. Sold at 105
2. Prepare adjusting entries for the bonds on December 31, 2018, under all three assumptions. (Use the straight-line amortization method.)
3. Show how the bond liabilities would appear on the December 31, 2018, balance sheet under each of the three assumptions.
4. **Interpretive Question:** What condition would cause the bonds to sell at 97? At 105?

P 10-14

LO 3
LO 5

Accounting for Bonds Issued at a Premium

On March 1, 2017, Roger Corporation issued $180,000 of 12%, five-year bonds at 105. The bonds were dated March 1, 2017, and interest is payable on March 1 and September 1. The maturity date of the bonds is March 1, 2022. Roger records amortization using the straight-line method. Roger's financial reporting year ends on December 31.

Required:

Provide all necessary journal entries on each of the following dates:

1. March 1, 2017
2. September 1, 2017
3. December 31, 2017
4. March 1, 2022

P 10-15

LO 3
LO 5

Straight-Line versus Effective-Interest Amortization

Cyprus Corporation issued $150,000 of bonds on January 1, 2017, to raise funds to buy some special machinery. The maturity date of the bonds is January 1, 2022, with interest payable each January 1 and July 1. The stated rate of interest is 10%. When the bonds were sold, the effective rate of interest was 12%. The company's financial reporting year ends December 31.

Required:

1. Determine the price at which the bonds would be sold.
2. Prepare the amortization schedule using the effective-interest method.
3. Prepare a comparative schedule of interest expense for each year (2017–2022) for the effective-interest and straight-line methods of amortization.
4. Record the journal entry for the last interest recognition and interest payment using the amortization schedule in part (2).
5. Record the journal entry for the retirement of the bonds.
6. **Interpretive Question:** Is the difference between the interest expense each year between the straight-line and effective-interest methods sufficient to require the use of the effective-interest method? How do you think this question would be answered in practice?

P 10-16

LO 3
LO 5

Effective-Interest Amortization

Royce Corporation issued $350,000 of three-year, 12% bonds on January 1, 2017. The bonds pay interest on January 1 and July 1 each year. The bonds were sold to yield a 10% return, compounded semiannually.

Required:

1. At what price were the bonds issued?
2. Prepare a schedule to amortize the premium or discount on the bonds using the effective-interest amortization method.
3. Use the information in the amortization schedule prepared for part (2) to record the interest payment on July 1, 2019, including the appropriate amortization of the premium or discount.
4. **Interpretive Question:** Explain why these bonds sold for more or less than face value.

P 10-17

LO 3
LO 5

Straight-Line versus Effective-Interest Amortization

Foster Corporation issued three-year bonds with a $180,000 face value on March 1, 2017, in order to pay for a new computer system. The bonds mature on March 1, 2020, with interest payable on March 1 and September 1. The contract rate of interest is 10%. (Interest is compounded semiannually.) When the bonds were sold, the effective rate of interest was 12%. The company's fiscal year ends on February 28.

Required:

1. At what price were the bonds issued based on the information presented?
2. Prepare an amortization schedule using the effective-interest method.

3. Prepare a schedule of interest expense for each year (2017–2020), comparing the annual interest expense for straight-line and effective-interest amortization.
4. Using the amortization schedule prepared in part (2), prepare the journal entry to record the interest payment on September 1, 2017.
5. Prepare the adjusting journal entry to record accrued interest on February 28, 2018.
6. Prepare the journal entry to retire the bonds on March 1, 2020, assuming all interest has been paid prior to retirement.

P 10-18

LO 3
LO 5

Unifying Concepts: Accounting for Bonds Payable

Gonzalez Corporation was authorized to issue $100,000 of 7%, four-year bonds, dated May 1, 2017. All the bonds were sold on that date when the effective interest rate was 8%. Interest is payable on May 1 and November 1 each year. The company follows a policy of amortizing premium or discount using the effective-interest method. The company closes its books on December 31 of each year.

Required:

1. Calculate the issuance price of the bonds.
2. Prepare an amortization schedule that covers the life of the bond.
3. Prepare journal entries at the following dates based on the information shown in the amortization schedule prepared for part (2).
   a. December 31, 2017
   b. May 1, 2018
   c. November 1, 2018
   d. December 31, 2018
4. Based on the journal entries prepared for part (3), how much interest expense related to this bond issue did the company report on its statement of comprehensive income for the year 2018?
5. What was the carrying amount of this bond issue on the balance sheet of the company at December 31, 2018?
6. **Interpretive Question:** Explain why another company in the same industry, which issued bonds with the same amount of face value, the same date of issuance, and the same stated rate of interest, might have had an issuance price of more or less than the price you computed for the issuance of the Gonzalez Corporation bonds.

P 10-19

LO 3
LO 5

Accounting for Bonds Issued at a Discount

On January 1, 2017, Edward Elric Ltd. issued $4,000,000, 8%, 10-year bonds at $3,508,434. This price resulted in an effective-interest rate of 10% on the bonds. Edward Elric Ltd. uses the effective-interest method to amortize bond premium or discount. The bonds pay annual interest on January 1.

Required: (Round all computations to the nearest dollar.)

1. Prepare the journal entry to record the issuance of the bonds on January 1, 2017.
2. Prepare an amortization table through December 31, 2018 (2 interest periods) for this bond issue.
3. Prepare the journal entry to record the accrual of interest and the amortization of the discount on December 31, 2017.
4. Prepare the journal entry to record the payment of interest on January 1, 2018.
5. Prepare the journal entry to record the accrual of interest and the amortization of the discount on December 31, 2018.