Chapter 10

Reporting and Interpreting Bonds

ANSWERS TO QUESTIONS

1. A bond is a liability that may or may not be secured by a mortgage on specified assets. Bonds usually are in denominations of $1,000 or $10,000, are transferable by endorsement, and may be bought and sold daily by investors. A bond specifies a maturity date and rate of interest that will be paid on the principal amount. Bonds usually are issued to obtain cash for long-term asset acquisitions (operational assets) and expansion of the entity.

2. A bond indenture is an agreement drawn up by a company planning to sell a bond issue. The indenture specifies the legal provisions of the bond issue such as maturity date, rate of interest, date of interest payments, and any conversion privileges. When a bond is sold, an investor receives a bond certificate (i.e., a bond). All of the bond certificates for a single bond issue are identical in most respects. That is, each certificate states the same maturity date, interest rate, interest dates, and other provisions of the bond issue.

3. Secured bonds are supported by a mortgage or pledge of specific assets as a guarantee of payment. Secured bonds are designated on the basis of the type of asset pledged, such as real estate mortgage bonds and equipment trust bonds. Unsecured bonds are not supported by a mortgage or pledge of specific assets as a guarantee of payment at maturity date. Unsecured bonds usually are called debentures.

4. Callable bonds—bonds that may be called for early retirement at the option of the issuer.

Convertible bonds—bonds that may be converted to other securities of the issuer (usually common stock) after a specified future date at the option of the bondholder.

5. Several important advantages of bonds compared with capital stock benefit the issuer. The issuance of bonds establishes a fixed amount of liability and a fixed rate of interest on the bond, and interest payments to the bondholders are deductible on the income tax return of the issuer. This deduction for tax purposes reduces the net cost of borrowing. For example, a corporation with a 40% average tax rate and bonds payable with a 10% interest rate would incur a net interest rate of 10% x 60% = 6%.

6. The higher the tax rate is, the lower the net cost of borrowing money because the interest paid on borrowed money is deductible on the income tax return of the borrower. The higher the income tax rate the less the net cost of interest for the borrower. For example, a corporation with an average tax rate of 40% and debt with 10% interest per annum incurs a net interest rate of 10% x 60% = 6%. In contrast, the same corporation with a 20% average tax rate incurs a net interest rate of 10% x 80% = 8%.

7. At the date of issuance, bonds are recorded at their current cash equivalent amount; that is, the amount of cash received for the bonds when issued. The recording is in conformity with the cost principle.

8. When a bond is issued (sold) at its face amount, it is issued at par. In contrast, when a bond is sold at an amount lower than the par amount, it is issued at a discount, and conversely, when it is sold at a price above par, it is issued at a premium. A bond will sell at a discount when the market, or effective, rate of interest is higher than the stated rate of interest on the bond. In contrast, when the market or effective rate of interest is lower than the stated rate, the bond will sell at a premium. Discounts or premiums on bonds payable are adjustments to the effective interest rate on the bonds. Therefore, the discount or premium is amortized over the life of the bonds as an increase or decrease in the amount of interest expense for each period.

9. The stated rate of interest is the rate specified on a bond, whereas the effective rate of interest is the market rate at which the bonds are selling currently.

10. When a bond is sold at par, the stated interest rate and the effective or market interest rate are identical. When a bond is sold at a discount, the stated rate of interest is lower than the effective rate of interest on the bond. In contrast, when a bond is sold at a premium, the stated rate of interest is higher than the effective rate of interest.

11. A bond issued at par will have a book or carrying value, or net liability, equal to the par or principal of the bond. This amount should be reported as the carrying value on each balance sheet date. When a bond is sold at a premium or discount, the premium or discount must be amortized over the outstanding life of the bond. When there is bond discount or premium, the par amount of the bond less the unamortized discount, or plus the unamortized premium, must be reported on the balance sheet as the net liability as follows:

|  |  |  |  |
| --- | --- | --- | --- |
| Bonds payable | $100,000 |  | $100,000 |
| Less: Unamortized discount | 12,000 |  |  |
| Plus: Unamortized premium |  |  | 12,000 |
| Book value (net liability) | $ 88,000 |  | $112,000 |

12. The basic difference between straight-line amortization and effective-interest amortization of bond discount and premium is that, under straight-line amortization, an equal amount of premium or discount is amortized to interest expense each period. Straight-line amortization per interest period is computed by dividing the total amount of the premium or discount by the number of periods the bonds will be outstanding. Under effective-interest amortization, the amount of premium or discount amortized is different each period. Effective-interest amortization of bond premium and discount correctly measures the current cash equivalent amount of the bonds and the interest expense reported on the income statement based on the issuance entry. It measures the amount of amortization by relating the market (yield) rate to the net liability at the beginning of each period. For this reason interest expense and the bond carrying value are measured on a present value basis. The straight-line method can be used only when the results are not materially different from the results of the effective-interest method.

ANSWERS TO MULTIPLE CHOICE

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1. c) | 1. c) | 1. b) | 1. d) | 1. c) |
| 1. b) | 1. c) | 1. c) | 1. a) | 1. c) |

**Authors’ Recommended Solution Time**

(Time in minutes)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Mini-exercises | | Exercises | | Problems | | Alternate  Problems | | Cases and  Projects | |
| No. | Time | No. | Time | No. | Time | No. | Time | No. | Time |
| 1 | 5 | 1 | 10 | 1 | 40 | 1 | 20 | 1 | 25 |
| 2 | 5 | 2 | 10 | 2 | 30 | 2 | 30 | 2 | 20 |
| 3 | 5 | 3 | 15 | 3 | 30 | 3 | 35 | 3 | 20 |
| 4 | 5 | 4 | 15 | 4 | 40 | 4 | 40 | 4 | 30 |
| 5 | 5 | 5 | 15 | 5 | 50 | 5 | 40 | 5 | 30 |
| 6 | 5 | 6 | 10 | 6 | 45 | 6 | 35 | 6 | 25 |
| 7 | 5 | 7 | 20 | 7 | 45 |  |  | 7 | \* |
| 8 | 5 | 8 | 20 | 8 | 50 |  |  |  |  |
| 9  10  11  12 | 5  5  5  5 | 9  10  11  12  13  14  15  16  17 | 20  15  15  20  30  20  20  20  25 | 9  10  11  12  13  14 | 35  40  40  25  35  20 |  |  |  |  |
|  |  | 18  19  20  21  22 | 30  25  10  10  10 |  |  |  |  |  |  |

\* Due to the nature of this project, it is very difficult to estimate the amount of time students will need to complete the assignment. As with any open-ended project, it is possible for students to devote a large amount of time to these assignments. While students often benefit from the extra effort, we find that some become frustrated by the perceived difficulty of the task. You can reduce student frustration and anxiety by making your expectations clear. For example, when our goal is to sharpen research skills, we devote class time to discussing research strategies. When we want the students to focus on a real accounting issue, we offer suggestions about possible companies or industries.

**MINI-EXERCISES**

**M10–1.** 1. Balance Sheet

2. Income Statement

3. Statement of Cash Flows

4. May be in notes

5. Not at all

6. May be in notes

**M10–2**.

|  |  |  |  |
| --- | --- | --- | --- |
| **Principal** | $600,000 × 0.4564 | = | $273,840 |
| **Interest** | $ 24,000 × 13.5903 | = | 326,167 |
|  | **Issue Price** | = | $600,007\* |

\*Issue price should be exactly $600,000. The $7 difference is the result of rounding the present value factors at four digits.

**M10–3**.

|  |  |  |  |
| --- | --- | --- | --- |
| **Principal** | $900,000 × 0.4350 | = | $391,500 |
| **Interest** | $ 27,000 × 13.2944 | = | 358,949 |
|  | **Issue Price** | = | $750,449 |

**M10–4.**

January 1, 2014:

|  |  |  |  |
| --- | --- | --- | --- |
| Cash (+A) | 940,000 |  |  |
| Discount on Bonds Payable (+XL, -L) | 60,000 |  |  |
| Bonds Payable (+L) |  |  | 1,000,000 |

June 30, 2014:

|  |  |  |  |
| --- | --- | --- | --- |
| Interest Expense (+E, -SE) ($940,000 × 11% × 1/2) | 51,700 |  |  |
| Discount on Bonds Payable (-XL, +L) |  |  | 1,700 |
| Cash (-A) ($1,000,000 × 10% × 1/2) |  |  | 50,000 |

**M10–5.**

January 1, 2014:

|  |  |  |  |
| --- | --- | --- | --- |
| Cash (+A) | 580,000 |  |  |
| Discount on Bonds Payable (+XL, -L) | 20,000 |  |  |
| Bonds Payable (+L) |  |  | 600,000 |

June 30, 2014:

|  |  |  |  |
| --- | --- | --- | --- |
| Interest Expense (+E, -SE) | 31,000 |  |  |
| Discount on Bonds Payable (-XL, +L) |  |  | 1,000 |
| Cash (-A) |  |  | 30,000 |

**M10–6.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Principal** | $500,000 × 0.4564 | = | $228,200 |
| **Interest** | $ 25,000 × 13.5903 | = | 339,758 |
|  | **Issue Price** | = | $567,958 |

**M10–7.**

January 1, 2014:

|  |  |  |  |
| --- | --- | --- | --- |
| Cash (+A) | 620,000 |  |  |
| Premium on Bonds Payable (+L) |  |  | 20,000 |
| Bonds Payable (+L) |  |  | 600,000 |

December 31, 2014:

|  |  |  |  |
| --- | --- | --- | --- |
| Interest Expense (+E, -SE) | 52,000 |  |  |
| Premium on Bonds Payable (-L) | 2,000 |  |  |
| Cash (-A) |  |  | 54,000 |

**M10–8**

January 1, 2014:

|  |  |  |  |
| --- | --- | --- | --- |
| Cash (+A) | 910,000 |  |  |
| Premium on Bonds Payable (+L) |  |  | 60,000 |
| Bonds Payable (+L) |  |  | 850,000 |

December 31, 2014:

|  |  |  |  |
| --- | --- | --- | --- |
| Interest Expense (+E, -SE) ($910,000 × 7%) | 63,700 |  |  |
| Premium on Bonds Payable (-L) | 4,300 |  |  |
| Cash (-A) ($850,000 × 8%) |  |  | 68,000 |

**M10–9.**

The debt-to-equity ratio and times interest earned ratio are both measures of the risk associated with using debt in the capital structure of a company. A company could have a high debt-to-equity ratio with relatively little risk if it generated a high level of stable earnings. On the other hand, a company with a low debt-to-equity ratio might be risky if it was unable to earn any profits. For this reason, most analysts look to the times interest earned ratio as a measure of a company’s ability to meet its required interest payments.

**M10–10.**

If the interest rates fall after the issuance of a bond, the bond’s price will increase. The company will report a loss on the debt retirement. On the balance sheet, cash and bonds payable will decrease. On the income statement, a loss would be recorded.

**M10–11.**

When a company issues a bond at a discount, the interest expense each period will be more than the cash payment for the interest. When a company issues a bond at a premium, the interest expense will be less than the cash payment for the interest. Neither is affected by the method used to amortize the discount or premium.

**M10–12.**

Cash paid to retire a bond would be reported in the financing activities section of the Statement of Cash Flows while cash paid for interest payments would be reported in the operating activities section.

EXERCISES

**E10–1.**

1. Bond principal, par value, or face value

2. Par value or face value

3. Face value or par value

4. Stated rate, coupon rate, or contract rate

5. Debenture

6. Callable bonds

7. Convertible bonds

**E10–2.**

The AT&T bonds have a coupon interest rate of 6.5%. If bonds with a $10,000 face value were purchased, the issue price would be $8,950 and they would provide a cash yield of 7.3%. A decline in value after issuance would have no impact on AT&T’s financial statements.

**E10–3.**

|  |  |  |  |
| --- | --- | --- | --- |
| CASE A: |  |  |  |
| $100,000 x 0.5835 | $ 58,350 |  |  |
| $8,000 x 5.2064 | 41,651 |  |  |
| Issue price (market and stated rate same) | $100,001 |  | (at par; $1 |
|  |  |  | rounding error) |
| CASE B: |  |  |  |
| $100,000 x 0.6651 | $ 66,510 |  |  |
| $8,000 x 5.5824 | 44,659 |  |  |
| Issue price (market rate less than stated rate) | $111,169 |  | (at a premium) |
| CASE C: |  |  |  |
| $100,000 x 0.5470 | $ 54,700 |  |  |
| $8,000 x 5.0330 | 40,264 |  |  |
| Issue price (market rate more than stated rate) | $ 94,964 |  | (at a discount) |

**E10–4.**

|  |  |  |  |
| --- | --- | --- | --- |
| CASE A: |  |  |  |
| $500,000 x 0.6730 | $ 336,500 |  |  |
| $15,000 x 16.3514 | 245,271 |  |  |
| Issue price (market rate less than stated rate) | $581,771 |  | (at a premium) |
|  |  |  |  |
| CASE B: |  |  |  |
| $500,000 x 0.5537 | $ 276,850 |  |  |
| $15,000 x 14.8775 | 223,163 |  |  |
| Issue price (market rate and stated rate same) | $500,013 |  | (at par, $13 |
| CASE C: |  |  | rounding error) |
| $500,000 x 0.4350 | $ 217,500 |  |  |
| $15,000 x 13.2944 | 199,416 |  |  |
| Issue price (market rate more than stated rate) | $ 416,916 |  | (at a discount) |

**E10–5.**

Applied Technologies’ ratios look better than Innovative Solutions’ ratios. Applied Technologies has a lower debt-to-equity ratio than Innovative Solutions. This means that they have less debt in their capital structure, and therefore, are a less leveraged company and have less risk than Innovative Solutions. Applied Technologies’ times interest earned ratio is higher than the ratio for Innovative Solutions. This also makes Applied Technologies a less risky company than Innovative Solutions because Applied Technologies generates a larger amount of income compared to its obligatory payments to creditors than Innovative Solutions.

**E10–6.**

Computations:

Interest:

|  |  |  |
| --- | --- | --- |
| $250,000 x 6% x 1/2 | = | $7,500 |

Present value:

|  |  |  |
| --- | --- | --- |
| $250,000 x 0.6756 | = | 168,900 |
| $ 7,500 x 8.1109 | = | 60,832 |
| Issue price | = | $229,732 |

**E10–7.**

Computations:

Interest:

|  |  |  |
| --- | --- | --- |
| $750,000 x 8% | = | $ 60,000 |

Present value:

|  |  |  |
| --- | --- | --- |
| $750,000 x 0.4224 | = | 316,800 |
| $ 60,000 x 6.4177 | = | 385,062 |
| Issue price | = | $701,862 |

Req. 1

January 1:

|  |  |  |  |
| --- | --- | --- | --- |
| Cash (+A) | 701,862 |  |  |
| Discount on Bonds Payable (+XL, -L) | 48,138 |  |  |
| Bonds Payable (+L) |  |  | 750,000 |

Req. 2

December 31:

|  |  |  |  |
| --- | --- | --- | --- |
| Interest Expense (+E, -SE) | 64,814 |  |  |
| Discount on Bonds Payable (-XL, +L) |  |  | 4,814 |
| Cash (-A) |  |  | 60,000 |

Req. 3

December 31, 2014:

|  |  |
| --- | --- |
| Income statement: |  |
| Interest expense | $ 64,814 |

Balance sheet:

|  |  |  |  |
| --- | --- | --- | --- |
| Long-term Liabilities |  |  |  |
| Bonds payable | $750,000 |  |  |
| Less: Unamortized discount ($48,138 - $4,814) | 43,324 |  | $706,676 | |

**E10–8.**

Computations:

Interest:

|  |  |  |
| --- | --- | --- |
| $600,000 x 7.5% x 1/2 | = | $ 22,500 |

Present value:

|  |  |  |
| --- | --- | --- |
| $600,000 x 0.7168 | = | 430,080 |
| $ 22,500 x 6.6638 | = | 149,936 |
| Issue price | = | $580,016 |

Req. 1

January 1:

|  |  |  |  |
| --- | --- | --- | --- |
| Cash (+A) | 580,016 |  |  |
| Discount on Bonds Payable (+XL, -L) | 19,984 |  |  |
| Bonds Payable (+L) |  |  | 600,000 |

Req. 2

June 30:

|  |  |  |  |
| --- | --- | --- | --- |
| Interest Expense\* (+E, -SE) | 24,651 |  |  |
| Discount on Bonds Payable (-XL, +L) |  |  | 2,151 |
| Cash (-A) |  |  | 22,500 |

\*($580,016 x 8.5% x ½)

Req. 3

June 30, 2014:

|  |  |
| --- | --- |
| Income statement: |  |
| Interest expense | $ 24,651 |

Balance sheet:

|  |  |  |  |
| --- | --- | --- | --- |
| Long-term Liabilities |  |  |  |
| Bonds payable | $600,000 |  |  |
| Less: Unamortized discount ($19,984 – $2,151) | 17,833 |  | $582,167 | |

**E10–9.**

Computations:

Interest:

|  |  |  |
| --- | --- | --- |
| $600,000 x 7.5% x 1/2 | = | $ 22,500 |

Present value:

|  |  |  |
| --- | --- | --- |
| $600,000 x 0.7168 | = | 430,080 |
| $ 22,500 x 6.6638 | = | 149,936 |
| Issue price | = | $580,016 |

Req. 1

January 1:

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
| Cash (+A) | 580,016 |  |  |
| Bonds Payable (+L) |  |  | 580,016 |

Req. 2

June 30:

|  |  |  |  |
| --- | --- | --- | --- |
| Interest Expense\* (+E, -SE) | 24,651 |  |  |
| Bonds Payable (+L) |  |  | 2,151 |
| Cash (-A) |  |  | 22,500 |

\*($580,016 x 8.5% x ½)

Req. 3

June 30, 2014:

|  |  |
| --- | --- |
| Income statement: |  |
| Interest expense | $ 24,651 |

Balance sheet:

|  |  |  |  |
| --- | --- | --- | --- |
| Long-term Liabilities |  |  |  |

Bonds payable $582,167

**E10–10.**

Req. 1

Issue price:

1. Par, $500,000 – Carrying value at end of 1 year, $481,100 = $18,900 (unamortized discount for 9 remaining years).

2. $18,900 ÷ 9 years = $2,100 discount amortization per year (straight line).

3. $481,100 – $2,100 = $279,000 issue price (discount $21,000).

Issuance entry:

|  |  |  |  |
| --- | --- | --- | --- |
| Cash (+A) | 479,000 |  |  |
| Discount on bonds payable (+XL, -L) | 21,000 |  |  |
| Bonds payable (+L) |  |  | 500,000 |

Req. 2

Coupon (stated interest) rate:

1. Reported interest expense, $23,100 – Discount amortized, $2,100 = $21,000 (cash interest).

2. $21,000 ÷ $500,000 = 4.2% coupon (stated interest) rate.

Interest expense:

|  |  |  |  |
| --- | --- | --- | --- |
| Interest expense (+E, -SE) | 23,100 |  |  |
| Discount on bonds payable ($21,000 ÷ 10 years) (-XL, +L) |  |  | 2,100 |
| Cash ($500,000 x 4.2%) (-A) |  |  | 21,000 |

**E10–11.**

1. Issue price: $948. Stated rate, 6%; effective or yield rate, 8% (both were given).

2. Discount: $1,000 – $948 = $52.

3. $1,000 x 6% = $60.

4. 2014, $76; 2015, $77; 2016, $79.

5. Balance sheet:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2014 |  | $ 964 |  |  |
| 2015 |  | $ 981 |  |  |
| 2016 |  | $1,000 |  | (immediately before retirement) |

6. Effective-interest amortization was used.

**E10–11. (continued)**

7. (a) $1,000 x 6% = $60.

(b) $964 x 8% = $77 (rounded).

(c) $77 – $60 = $17.

(d) $964 + $17 = $981.

8. Effective-interest amortization measures the amount of interest expense and net liability for each period on a present value basis. The interest expense and related amortization are based on the actual unpaid balance of the debt and the effective interest rate. Straight-line amortization is an approximation that does not take these factors into consideration. The effective-interest method is conceptually preferable but the straight-line method is used widely in practice because of computational simplicity and the materiality concept.

**E10–12.**

The effective interest rate for a bond is determined by market forces and not the company. American was able to specify the coupon rate for the bonds which determines the periodic interest payments. It appears that American intended to sell the bonds close to par value which would be achieved by having a coupon rate that was the same as the market rate. The market rate of interest continually changes as the result of such factors as inflation expectations and the level of business activity. It is virtually impossible to issue a bond at a point when the coupon rate and the market rate are exactly the same.

**E10–13.**

Assuming that both companies offer the same business risk, many people might prefer the bond that had the slightly higher yield which is Walt Disney at 9.5%. If interest rates were to fall significantly, companies might decide to call their bonds and issue new ones at a lower interest rate. In this case, a zero coupon bond offers an extra margin of protection. A zero is sold at a deep discount (say 60% of par). It would be very unusual to see a company call such a bond if it were callable at par. In this case, the PepsiCo bond would be preferred.

Many people who are retired desire to have a steady income without engaging in time-consuming transactions. These people would probably not want to buy a zero coupon bond which paid interest only at maturity.

**E10–14.**

Computations:

Interest:

|  |  |  |
| --- | --- | --- |
| $1,400,000 x 8% x 1/2 | = | $ 56,000 |

Present value:

|  |  |  |
| --- | --- | --- |
| $1,400,000 x 0.7894 | = | 1,105,160 |
| $ 56,000 x 7.0197 | = | 393,103 |
| Issue price | = | $1,498,263 |

Req. 1

January 1:

|  |  |  |  |
| --- | --- | --- | --- |
| Cash (+A) | 1,498,263 |  |  |
| Premium on Bonds Payable (+L) |  |  | 98,263 |
| Bonds Payable (+L) |  |  | 1,400,000 |

Req. 2

June 30:

|  |  |  |  |
| --- | --- | --- | --- |
| Interest Expense (+E, -SE) | 43,717 |  |  |
| Premium on Bonds Payable (-L) | 12,283 |  |  |
| Cash (-A) |  |  | 56,000 |

Req. 3

Balance sheet:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Long-term Liabilities |  | |  |  |
| Bonds payable | $1,400,000 | |  |  |
| Plus: Unamortized premium ($98,263 – $12,283) | | 85,980 |  | $1,485,980 |

|  |  |  |  |
| --- | --- | --- | --- |
| Income statement: |  |  |  |
| Interest expense | $43,717 |  |  |

**E10–15.**

Computations:

Interest:

|  |  |  |
| --- | --- | --- |
| $2,000,000 x 5% | = | $ 100,000 |

Present value:

|  |  |  |
| --- | --- | --- |
| $2,000,000 x 0.4350 | = | 870,000 |
| $ 100,000 x 13.2944 | = | 1,329,440 |
| Issue price | = | $2,199,440 |

Req. 1

January 1:

|  |  |  |  |
| --- | --- | --- | --- |
| Cash (+A) | 2,199,440 |  |  |
| Premium on Bonds Payable (+L) |  |  | 199,440 |
| Bonds Payable (+L) |  |  | 2,000,000 |

Req. 2

June 30:

|  |  |  |  |
| --- | --- | --- | --- |
| Interest Expense (+E, -SE) ($2,199,440 x 4.25%) | 93,476 |  |  |
| Premium on Bonds Payable (-L) | 6,524 |  |  |
| Cash (-A) |  |  | 100,000 |

Req. 3

Balance sheet:

|  |  |  |  |
| --- | --- | --- | --- |
| Long-term Liabilities |  |  |  |
| Bonds payable | $2,000,000 |  |  |
| Plus: Unamortized premium ($199,440 – $6,524) | 192,916 |  | $2,192,916 |

|  |  |  |
| --- | --- | --- |
| Income statement: |  |  |
| Interest expense | $93,476 |  |

**E10–16.**

Computations:

Interest:

|  |  |  |
| --- | --- | --- |
| $2,000,000 x 5% | = | $ 100,000 |

Present value:

|  |  |  |
| --- | --- | --- |
| $2,000,000 x 0.4350 | = | 870,000 |
| $ 100,000 x 13.2944 | = | 1,329,440 |
| Issue price | = | $2,199,440 |

Req. 1

January 1:

|  |  |  |  |
| --- | --- | --- | --- |
| Cash (+A) | 2,199,440 |  |  |
| Bonds Payable (+L) |  |  | 2,199,440 |
|  |  |  |  |

Req. 2

June 30:

|  |  |  |  |
| --- | --- | --- | --- |
| Interest Expense (+E, -SE) ($2,199,440 x 4.25%) | 93,476 |  |  |
| Bonds Payable (-L) | 6,524 |  |  |
| Cash (-A) |  |  | 100,000 |

Req. 3

Balance sheet:

|  |  |  |  |
| --- | --- | --- | --- |
| Long-term Liabilities |  |  |  |
| Bonds payable | $2,192,916 |  |  |

|  |  |  |
| --- | --- | --- |
| Income statement: |  |  |
| Interest expense | $93,476 |  |

**E10–17.**

Req. 1

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Date |  | Cash Interest |  | Interest Expense |  | Premium Amortization |  | Net Liability Balance |
| 1/1/2014 |  |  |  |  |  |  |  | $10,278 |
| 12/31/2014 |  | $500 |  | $10,278 x 4% = $411 |  | $89 |  | 10,189 |
| 12/31/2015 |  | 500 |  | $10,189 x 4% = $408 |  | 92 |  | 10,097 |
| 12/31/2016 |  | 500 |  | $10,097 x 4% = $404 |  | 96 |  | 10,001\* |

\* $1 rounding error

Present value computation:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Principal: |  | $10,000 x .8890 |  | $ 8,890 |
| Interest: |  | 500 x 2.7751 |  | 1,388 |
|  |  | Issue price |  | $10,278 |

Req. 2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 2014 |  | 2015 |  | 2016 |
| December 31: |  |  |  |  |  |
| Interest expense | $411 |  | $408 |  | $404 |
| Bond liability…………………. | $10,189 |  | $10,097 |  | $10,000\* |
|  |  |  |  |  |  |

**\***Immediately before repayment of principal

**E10–18.**

Req. 1

Cash is increased on the balance sheet. The statement of cash flows shows an inflow from financing activities. Bonds payable and premium on bonds payable are increased on the balance sheet. The debt-to-equity ratio will be higher.

January 1:

|  |  |  |  |
| --- | --- | --- | --- |
| Cash (+A) | 376,774 |  |  |
| Premium on bonds payable (+L) |  |  | 76,774 |
| Bonds payable (+L) |  |  | 300,000 |
| Principal: $300,000 x .7441 | | | $223,230 |
| Interest: $18,000 x 8.5302 | | | 153,544 |
| Issue (sale) price | | | $376,774 |

**E10–18. (continued)**

Req. 2

The interest expense will be increased on the income statement and the cash will be decreased on the balance sheet. The premium on bonds payable will be decreased on the balance sheet. The debt-to-equity ratio will be decreased and the times interest earned ratio will be lower.

December 31:

|  |  |  |  |
| --- | --- | --- | --- |
| Interest expense (+E, -SE) | 10,323 |  |  |
| Premium on bonds payable ($76,774 ÷10 periods) (-L) | 7,677 |  |  |
| Cash ($300,000 x 6%) (-A) |  |  | 18,000 |

Req. 3

December 31, 2014:

Balance Sheet:

|  |  |  |
| --- | --- | --- |
| Long-term Liabilities |  |  |
| Bonds Payable | $300,000 |  |
| Add: Unamortized premium ($76,774 - $7,677) | 69,097 | $369,097 |

**E10–19.**

Req. 1

Computations:

Interest:

|  |  |  |
| --- | --- | --- |
| $1,000,000 x 9% | = | $90,000 ÷ 2 = $45,000 |

Present value

|  |  |  |
| --- | --- | --- |
| $ 1,000,000 x .4564 | = | 456,400 |
| $ 45,000 x 13.5903 | = | 611,564 |
|  |  | $ 1,067,964 |

June 30:

|  |  |  |  |
| --- | --- | --- | --- |
| Cash (+A) | 1,067,964 |  |  |
| Bonds payable (+L) |  |  | 1,000,000 |
| Premium on bonds payable(+L) |  |  | 67,964 |
| Req. 2 |  |  |  |

The amortization of bond premium does not affect cash flows directly but does result in cash payments for interest that are higher than reported interest expense for the period.

**E10–20.**

|  |  |  |  |
| --- | --- | --- | --- |
| Bonds payable (-L) | 1,000,000 |  |  |
| Loss on bond call (+Loss, -SE) | 50,000 |  |  |
| Cash (-A) |  |  | 1,050,000 |

**E10–21.**

|  |  |  |  |
| --- | --- | --- | --- |
| Bonds payable (-L) | 1,200,000 |  |  |
| Loss on bond call (+Loss, -SE) | 159,000 |  |  |
| Discount on bonds payable (-XL,+ L) |  |  | 75,000 |
| Cash (-A) |  |  | 1,284,000 |

**E10–22.**

1. Impacts Statement of Cash Flows (SCF) : report $960,000 inflow in financing section
2. Does not impact SCF
3. Impacts SCF : report $57,000 payment in operating activities section
4. Impacts SCF : report $915,000 payment in financing section

**PROBLEMS**

**P10–1.**

Req. 1—Comparison of results:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Item | Actual Results | | |  | Results with an Increase in Debt and a Decrease in Stockholders’ Equity | | |
| (a) | Total debt |  | $ 40,000 |  |  |  | $90,000 |  |
| (b) | Total assets |  | 360,000 |  |  |  | 360,000 |  |
| (c) | Total stockholders’ equity |  | 320,000 |  |  |  | 270,000 |  |
| (d) | Interest expense (total at 9%) |  | 3,600 |  |  |  | 8,100 |  |
| (e) | Net income |  | 70,280 |  |  |  | 67,130 |  |
| (f) | Return on total assets |  | 20.2% |  |  |  | 20.2% |  |
| (g) | Earnings available to stockholders: |  |  |  |  |  |  |  |
|  | (1) Amount |  | $ 70,280 |  |  |  | $ 67,130 |  |
|  | (2) Per share |  | 3.06 |  |  |  | 3.73 |  |
|  | (3) Return on stockholders’ equity |  | 22.0% |  |  |  | 24.9% |  |
|  |  |  |  |  |  | | | |

Computations:

(a) Given

(b) Given

(c) Given

(d) $90,000 x 9% = $8,100.

(e) ($300,000 – $196,000 – $8,100) = $95,900, pretax; $95,900 x (100% – 30%) = $67,130.

(f) $70,280 + [$3,600 x (100% – 30%) = $2,520] = $72,800; $72,800÷ $360,000 = 20.2%.

$67,130 + [$8,100 x (100% – 30%) = $5,670] = $72,800; $72,800÷ $360,000 = 20.2%.

(g–1) From Item (e)

(g–2) $70,280 ÷ 23,000 shares = $3.06 EPS.

$67,130 ÷ 18,000 shares = $3.73 EPS.

(g–3) $70,280 ÷ $320,000 = 22.0%.

$67,130 ÷ $270,000 = 24.9%.

**P10–1. (continued)**

Req. 2 Interpretation:

The recommendation provided higher financial leverage compared with actual financial leverage. This increase in positive financial leverage was because the company had a net of tax interest rate on debt that was lower than the return on total assets. This increase is favorable to the stockholders because their potential dividends (based on retained earnings) and total owners’ equity are much higher. The disadvantage of higher debt is the cash required to pay interest and principal. This company appears to have the potential for future success. Therefore, the higher debt leverage seems advisable.

**P10–2.**

Req. 1

Interest:

|  |  |  |
| --- | --- | --- |
| $500,000 x 8% | = | $ 40,000 ÷ 2 = $20,000 |

Present value

|  |  |  |
| --- | --- | --- |
| $ 500,000 x .6756 | = | 337,800 |
| $ 20,000 x 8.1109 | = | 162,218 |
| Issue price |  | $500,018 |

The exact present value is $500,000. The $18 difference is due to rounding the present value factors at four digits.

Req. 2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | June 30  2014 |  | Dec. 31  2014 |  |
| Interest expense | $20,000 |  | $20,000 |  |

Req. 3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | June 30  2014 |  | Dec. 31  2014 |  |
| Cash paid | $20,000 |  | $20,000 |  |

Req. 4

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2014 |  | 2015 |  |
| Bonds payable | $500,000 |  | $500,000 |  |

**P10–3.**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Case A |  | Case B |  | Case C |  |
| a. | Cash received at issue | $500,000 |  | $490,000 |  | $515,000 |  |
| b. | Bond interest expense (pretax) | $ 35,000 |  | $ 36,000 |  | $ 33,500 |  |
| c. | Bonds payable, 7% | $500,000 |  | $500,000 |  | $500,000 |  |
| d. | Unamortized discount (deduct) \*\* |  |  | 9,000 |  |  |  |
| e. | Unamortized premium (add) \*\* |  |  |  |  | 13,500 |  |
| f. | Net liability | $500,000 |  | $491,000 |  | $513,500 |  |
|  | \*\*Balance in discount or premium account   (January 1, 2014) |  |  | $ 10,000 |  | $ 15,000 |  |
|  | Amortization during 2014 |  |  | (1,000) | ) | (1,500 | ) |
|  | Unamortized balance on December 31, 2014 |  |  | $ 9,000 |  | $ 13,500 |  |
| g. | Stated rate of interest (given) | 7% |  | 7% |  | 7% |  |
|  |  |  |  |  |  |  |  |

**P10–4.**

Req. 1

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| December 31, 2014—Financial statements: | | Case A |  | | Case B | |  | | Case C | | |
|  |  | At Par, 100 |  | | At 99 | |  | | At 104 | | |
| a. | Interest expense | $ 10,000 |  | | $ 10,100 | |  | | $ 9,600 | | |
| b. | Bonds payable | $100,000 |  | | $100,000 | |  | | $100,000 | | |
| c. | Unamortized premium or discount |  |  | | (900 | | ) | | 3,600 | | |
| d. | Net liability | $100,000 |  | | $ 99,100 | |  | | $103,600 | | |
| e. | Stated rate of interest | 10% |  | 10% | |  | | 10% | |
| f. | Cash interest paid | $ 10,000 |  | | $ 10,000 | |  | | $ 10,000 | |

**P10–4. (continued)**

Req. 2—Explanation of differences:

Item a, interest expense, is different (in this situation) from Item f, cash interest paid, by the amount of any bond discount or premium amortized for the period. This divergence reflects the fact that discount and premium are adjustments of interest expense because of a difference between the market and stated interest rates at date of issuance of bonds.

Req. 3

The letter should explain that most bonds pay a fixed rate of interest by contract. As market interest rates change over time, the price of the bond changes. When the market interest rates increase, the price of the bond will fall. When rates decrease, the bond price will increase. A discount simply means that the bond is selling for less than par; a premium occurs when the bond sells for more than par. There is no advantage to purchasing a bond at a discount because all bonds will adjust in price to yield the market rate of interest.

**P10–5.**

1. Computation of the amount of the bond liability when issued:

|  |  |  |
| --- | --- | --- |
| $200,000 x .4632 | = | $92,640 |
| $ 12,000 x 6.7101 | = | 80,521 |
| Issue Price |  | $173,161 |

2. Computation of interest expense recorded on December 31, 2014:

$173,161 x 8% = $13,853

3. Managers are normally relatively indifferent between the straight-line and effective- interest methods. The two methods typically produce very similar financial results. In such cases, most managers would select the method that is simpler to use, which would be the straight-line method.

4.

|  |  |  |
| --- | --- | --- |
| **Date** | **Debt-to-Equity** | **Times Interest Earned** |
| Issue date | Increase | No effect |
| Interest payment date | Increase | Decrease |

**P10–6.**

Req. 1

Computations:

Interest:

|  |  |  |
| --- | --- | --- |
| $700,000 x 8% x 1/2 | = | $ 28,000 |

Present value

|  |  |  |
| --- | --- | --- |
| $ 700,000 x 0.3769 | = | 263,830 |
| $ 28,000 x 12.4622 | = | 348,942 |
| Issue Price |  | $612,772 |

Req. 2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | June 30 |  | December 31 |  |
| Interest expense | $32,361 | \* | $32,361 | \* |

\*$700,000 - $612,772 = $87,228 ÷ 20 periods = $4,361 + $28,000 = $32,361

Req. 3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | June 30 |  | December 31 |  |
| Cash paid | $28,000 |  | $28,000 |  |

Req. 4

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | June 30 |  | December 31 |  |
| Bonds payable | $617,133 | \* | $621,494\* | \* |

\*$612,772 + $4,361 = $617,133

\*\*$617,133 + $4,361 = $621,494

**P10–7.**

Req. 1

Computations:

Interest:

|  |  |  |
| --- | --- | --- |
| $1,000,000 x 10% x 1/2 | = | $ 50,000 |

Present value

|  |  |  |  |
| --- | --- | --- | --- |
| $ 1,000,000 x 0.3118 | = | 311,800 | |
| $ 50,000 x 11.4699 | = | 573,495 | |
| Issue Price |  | $885,295 | |
| Req. 2 | | | | June 30 | |  | December 31 |  |
| Interest expense | | | | $53,118 | | \* | $53,305 | \*\* |

$885,295 x 12% x ½ = $53,118

\*\*[$885,295 + ($53,118 - $50,000)] x 12% x ½= $53,305

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Req. 3 | June 30 |  | December 31 |  |
| Cash paid | $50,000 |  | $50,000 |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Req. 4 | June 30 |  | December 31 |  |
| Bonds payable | $888,413 | \* | $891,718 | \*\* |

\*$885,295 + $3,118 = $888,413

\*\*$888,413+ $3,305 = $891,718

**P10–8.**

Req. 1

|  |  |  |  |
| --- | --- | --- | --- |
| Principal: |  | $800,000 x 0.5674 | $453,920 |
| Interest: |  | $ 64,000 x 3.6048 | 230,707 |
|  |  | Bond issue price | $684,627 |

The stated rate of interest is used only to compute the periodic cash interest payments of $64,000. This amount is necessary because it is discounted to PV using the effective interest rate.The effective-interest rate is used to discount the two future cash flows: principal and cash interest. The discounting must be based on the effective-interest rate because the selling (issue) price is the PV of the future cash flows.

Req. 2—Straight-line amortization:

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **2014** |  | **2015** |  | **2016** |  | **2017** |  | **2018** |
| a. | Cash interest payment   ($800,000 x 8%) | $64,000 |  | $64,000 |  | $64,000 |  | $64,000 |  | $64,000 |
| b. | Amortization of discount   ($115,373 ÷ 5 years) | 23,075 |  | 23,075 |  | 23,075 |  | 23,075 |  | 23,075 |
| c. | Bond interest expense | $87,075 |  | $87,075 |  | $87,075 |  | $87,075 |  | $87,075 |
|  |  | | | | | | | |

Req. 3 —Effective-interest amortization:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Bond Amortization Schedule | | | | | | | | | | | | | | | | | |
| Date |  | Cash Payment |  | *Interest Expense* | | |  |  | Amortization of Discount | | | | | | | Net Liability | |
| 1/1/2014 |  |  |  |  |  |  |  |  |  |  | | |  | | | $684,627 | |
| 12/31/2014 |  | $64,000 |  | $684,627 | x | 12% | = | $82,155 | | |  | $18,155 | |  | | | 702,782 | |
| 12/31/2015 |  | 64,000 |  | 702,782 | x | 12% | = | 84,334 | | |  | 20,334 | |  | | | 723,116 | |
| 12/31/2016 |  | 64,000 |  | 723,116 | x | 12% | = | 86,774 | | |  | 22,774 | |  | | | 745,890 | |
| 12/31/2017 |  | 64,000 |  | 745,890 | x | 12% | = | 89,507 | | |  | 25,507 | |  | | | 771,397 | |
| 12/31/2018 |  | 64,000 |  | 771,397 | x | 12% | = | 92,603\* | | | \* | 28,603 | |  | | | 800,000 | |
| $115,373 | | | | |

\*Rounded

A constant interest rate can be demonstrated each year by dividing interest expense by the net liability – the answer on all lines will be the effective rate (12%).

Req. 4

Effective-interest amortization is preferable to straight-line because it better measures interest expense (on the income statement) and the net liability (on the balance sheet). The effective-interest approach is conceptually sound because interest expense is based on the unpaid balance of the liability. In this case, interest expense as a percent of the net liability is 12% each period (the effective or true rate) only if the effective-interest approach is used. If the straight-line approach is used, the interest percent changes each year and ranges from 11.21% to 12.72%.

**P10–9.**

Req. 1

Computations:

Interest:

|  |  |  |
| --- | --- | --- |
| $2,000,000 x 10% x 1/2 | = | $ 100,000 |

Present value

|  |  |  |
| --- | --- | --- |
| $ 2,000,000 x 0.4564 | = | 912,800 |
| $ 100,000 x 13.5903 | = | 1,359,030 |
| Issue price |  | $2,271,830 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Req. 2 | June 30 |  | December 31 |  |
| Interest expense | $86,408 | \* | $86,408 | \* |

\*$2,271,830 - $2,000,000= $271,830 ÷ 20 periods = $13,592

$100,000 - $13,592 = $86,408

Req. 3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | June 30 |  | December 31 |  |
| Cash paid | $100,000 |  | $100,000 |  |

Req. 4

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | June 30 |  | December 31 |  |
| Bonds payable | $2,258,238 | \* | $2,244,646 | \*\* |

\*$2,271,830- $13,592 = $2,258,238

\*\*$2,258,238- $13,592 = $2,244,646

**P10–10.**

Req. 1

Computations:

Interest:

|  |  |  |
| --- | --- | --- |
| $700,000 x 13% x 1/2 | = | $ 45,500 |

Present value

|  |  |  |
| --- | --- | --- |
| $ 700,000 x 0.5584 | = | 390,880 |
| $ 45,500 x 7.3601 | = | 334,885 |
| Issue Price |  | $725,765 |

Req. 2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | June 30 |  | December 31 |  |
| Interest expense | $43,546 | \* | $43,429 | \*\* |

$725,765 x 12% x ½ = $43,546

\*\*[$725,765 - ($45,500- $43,546)] x 12% x ½= $43,429

Req. 3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | June 30 |  | December 31 |  |
| Cash paid | $45,500 |  | $45,500 |  |

Req. 4

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | June 30 |  | December 31 |  |
| Bonds payable | $723,811 | \* | $721,740\* | \* |

\*$725,765 – ($45,500 – $43,546) = $723,811

\*\*$723,811 – ($45,500 - $43,429) = $721,740

**P10–11.**

Req. 1

|  |  |  |  |
| --- | --- | --- | --- |
| **Principal:** |  | $300,000 x 0.6209 | $186,270 |
| **Interest:** |  | $33,000 x 3.7908 | 125,096 |
|  |  | Issue (sale) price | $311,366 |

Req. 2

January 1, 2014:

|  |  |  |  |
| --- | --- | --- | --- |
| Cash (+A) | 311,366 |  |  |
| Premium on bonds payable (+L) |  |  | 11,366 |
| Bonds payable (+L) |  |  | 300,000 |
| Sale of bonds at a premium. |  |  |  |

Req. 3

December 31, 2014:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Bond interest expense (+E, -SE) | 30,727 |  |  | |
| Premium on bonds payable (-L) | 2,273 |  |  | |
| Cash (-A) |  |  | 33,000 | |
| Interest payment plus premium amortization. | | | |

Req. 4

Income Statement for 2014:

Interest expense: $30,727

Balance Sheet at December 31, 2014:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Long-term Liabilities: |  |  | |  | |
| Bonds payable | $300,000 | |  | |  | |
| Add: Unamortized premium    ($11,366 – $2,273) | 9,093 | |  | | $309,093 | |

**P10–12.**

1. Missing amounts are underlined:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Date | Cash |  | Interest | | | Amortization | | | | | Balance | | |
| Jan. 1, 2014 |  |  |  |  |  |  |  |  |  |  |  | $48,808 |  |
| End of Year 2014 | $3,600 |  |  | $3,417 |  |  |  | $183 |  |  |  | 48,625 |  |
| End of Year 2015 | 3,600 |  |  | 3,404 |  |  |  | 196 |  |  |  | 48,429 |  |
| End of Year 2016 | 3,600 |  |  | 3,390 |  |  |  | 210 |  |  |  | 48,219 |  |
| End of Year 2017 | 3,600 |  |  | 3,381\* |  |  |  | 219 | \* |  |  | 48,000 |  |

 Calculations:

 Effective interest rate: $3,417 ÷ $48,808 = 7%

 Interest: 7% x Previous balance

 Amortization: Cash payment – Interest

 Balance: Previous balance – Amortization

 \*$6 rounding error

2. Maturity (par) amount: $48,000 from last column at end of the last year.

3. Cash received: $48,808 from last column at January 1, 2014.

4. Premium: $48,808 – $48,000 = $808.

5. Cash disbursed for interest: $3,600 per period x 4 years = $14,400 total.

6. Effective-interest amortization: Evident from the computations in the schedule. The amortization amount is different each year.

7. Stated rate of interest: $3,600 ÷ $48,000 = 7.5%.

8. Yield or effective rate of interest: $3,417 ÷ $48,808 = 7%.

9. Interest expense: 2014, $3,417; 2015, $3,404; 2016, $3,390; 2017, $3,381.

10. Balance sheet:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 2014 |  | 2015 |  | 2016 |  | 2017 |  |
| Long-Term Liabilities |  |  |  |  |  |  |  |  |
| Bonds payable, 7.5% |  |  |  |  |  |  |  |  |
| Maturity amount $48,000, plus unamortized   premium | $48,625 |  | $48,429 |  | $48,219 | \* | $48,000 | \* |

\* At the end of 2016 and during the last year of the term of the bonds before retirement they would be reported as a current liability on the balance sheet.

**P10–13.**

When a bond is sold for a premium, the amount of cash collected is greater than the maturity value. This extra amount is called a bond premium. The recorded value for this liability is the maturity value plus the unamortized amount of the premium.

Bond premiums are amortized over the life of a bond, using either the straight-line or effective-interest method. When bond premium amortization is recorded, the amount of bond premium is reduced. The reduction reported in the note is the result of the required amortization of the bond premium.

**P10–14.**

1. Financing, inflow

2. It is reported as an operating activity.

3. Financing, outflow

4. It is reported as an operating activity.

5. Financing, outflow

6. No effect**ALTERNATE PROBLEMS**

**AP10–1.**

Req. 1

Interest:

|  |  |  |
| --- | --- | --- |
| $2,000,000 x 10% | = | $ 200,000 ÷ 2 = $100,000 |

Present value

|  |  |  |
| --- | --- | --- |
| $ 2,000,000 x .6139 | = | 1,227,800 |
| $ 100,000 x 7.7217 | = | 772,170 |
| Issue price |  | $1,999,970 |

The exact present value is $2,000,000. The $30 difference is due to rounding the present value factors at four digits.

Req. 2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | June 30  2014 |  | Dec. 31  2014 |  |
| Interest expense | $100,000 |  | $100,000 |  |

Req. 3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | June 30  2014 |  | Dec. 31  2014 |  |
| Cash paid | $100,000 |  | $100,000 |  |

Req. 4

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2014 |  | 2015 |  |
| Bonds payable | $2,000,000 |  | $2,000,000 |  |

**AP10–2.**

(000’s):

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | At  End   of 2014 | At  End   of 2015 | At  End   of 2016 | At  End   of 2017 |
| Case A: Sold at Par  Interest expense on the  income statement | 10 | 10 | 10 | 10 |
| Net liability on balance sheet | 100 | 100 | 100 | 100 |
| Case B: Sold at a discount Interest expense on the income statement | 11 | 11 | 11 | 11 |
| Net liability on balance sheet | 96 | 97 | 98 | 99 |
| Case C: Sold at a premium Interest expense on the income statement | 8 | 8 | 8 | 8 |
| Net liability on balance sheet | 108 | 106 | 104 | 102 |

**AP10–3.**

Req. 1

Computations:

Interest:

|  |  |  |
| --- | --- | --- |
| $1,000,000 x 7% | = | $ 70,000 |

Present value

|  |  |  |
| --- | --- | --- |
| $ 1,000,000 x 0.6499 | = | 649,900 |
| 70,000 x 3.8897 | = | 272,279 |
| Issue Price |  | $922,179 |

Req. 2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2014 |  | 2015 |  |
| Interest expense | $85,564 | \* | $85,564 | \* |

\*$1,000,000 - $922,179 = $77,821 ÷ 5 years = $15,564 + $70,000 = $85,564

Req. 3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2014 |  | 2015 |  |
| Cash paid | $70,000 |  | $70,000 |  |

Req. 4

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2014 |  | 2015 |  |
| Bonds payable | $937,743 | \* | $953,307\* | \* |

\*$922,179 + $15,564 = $937,743

\*\*$937,743+ $15,564 = $953,307

**AP10–4.**

Req. 1

Computations:

Interest:

|  |  |  |
| --- | --- | --- |
| $2,000,000 x 6% | = | $ 120,000 |

Present value

|  |  |  |
| --- | --- | --- |
| $ 2,000,000 x 0.7130 | = | 1,426,000 |
| $ 120,000 x 4.1002 | = | 492,024 |
| Issue Price |  | $1,918,024 |

Req. 2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2014 |  | 2015 |  |
| Interest expense | $134,262 | \* | $135,260 | \*\* |

$1,918,024 x 7% = $134,262

\*\*[$1,918,024 + ($134,262- $120,000)] x 7% = $135,260

Req. 3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2014 |  | 2015 |  |
| Cash paid | $120,000 |  | $120,000 |  |

Req. 4

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2014 |  | 2015 |  |
| Bonds payable | $1,932,286\* |  | $1,947,546\* | \* |

\*$1,918,024 + $14,262 = $1,932,286

\*\*$1,932,286 + $15,260 = $1,947,546

**AP10–5.**

Req. 1

Computations:

Interest:

|  |  |  |
| --- | --- | --- |
| $900,000 x 10% | = | $ 90,000 |

Present value

|  |  |  |
| --- | --- | --- |
| $ 900,000 x 0.6499 | = | 584,910 |
| $ 90,000 x 3.8897 | = | 350,073 |
|  |  | $934,983 |

Req. 2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2014 |  | 2015 |  |
| Interest expense | $83,003 | \* | $83,003 | \* |

\*$934,983 - $900,000= $34,983 ÷ 5 years = $6,997

$90,000 - $6,997 = $83,003

Req. 3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2014 |  | 2015 |  |
| Cash paid | $90,000 |  | $90,000 |  |

Req. 4

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2014 |  | 2015 |  |
| Bonds payable | $927,986\* |  | $920,989\* | \* |

\*$934,983 - $6,997 = $927,986

\*\*$927,986 - $6,997 = $920,989

**AP10–6.**

Req. 1

Computations:

Interest:

|  |  |  |
| --- | --- | --- |
| $4,000,000 x 9% | = | $ 360,000 |

Present value

|  |  |  |
| --- | --- | --- |
| $ 4,000,000 x 0.7473 | = | 2,989,200 |
| $ 360,000 x 4.2124 | = | 1,516,464 |
| Issue Price |  | $4,505,664 |

Req. 2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2014 |  | 2015 |  |
| Interest expense | $270,340 | \* | $264,960 | \*\* |

$4,505,664 x 6% = $270,340

\*\*[$4,505,664 - ($360,000 - $270,340)] x 6% = $264,960

Req. 3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2014 |  | 2015 |  |
| Cash paid | $360,000 |  | $360,000 |  |

Req. 4

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2014 |  | 2015 |  |
| Bonds payable | $4,416,004 |  | $4,320,964\* | \* |

\*$4,505,664 - $89,660 = $4,416,004

**\*\***$4,416,004 - $95,040 = $4,320,964

**CASES AND PROJECTS**

*FINANCIAL REPORTING AND ANALYSIS CASES*

**CP10–1.**

Req. 1

The company repaid $30,000,000 for its note payable. See the Statement of Cash Flows for the answer to this question. .

Req. 2

Bonds must be reported unless the company has not issued any. Therefore, the company must not have issued bonds.

Req. 3

Note 9 describes the company’s credit arrangements. The company has borrowing arrangements with four separate financial institutions under which it may borrow an aggregate of $245 million.

**CP10–2.**

Req. 1

Companies are not required to report immaterial amounts. Most likely, the amount of cash interest paid by Urban Outfitters was immaterial. This question is related to the next one.

Req. 2

Bonds must be reported unless the company has not issued any. Therefore, the company must not have issued bonds.

Req. 3

The notes disclose that the company has established an unsecured line of credit.

**CP10–3.**

Req. 1

The primary source of cash flow for both companies is from their operating activities. From examining the financing activities section of the statement of cash flows, it is apparent that neither company relies on borrowed funds to a significant degree.

Req. 2

Accounting ratios are useful in most circumstances but not all. The capital structures for these two companies are unusual and have relatively little debt. As a result, they have minimal related interest costs. The debt/equity ratios reflect these low debt levels. Because of the correspondingly low interest costs, a times interest earned ratio cannot be computed.

**CP10–4.**

Req. 1

Most bond indentures specify two types of cash outflows during the life of a bond issue: (1) periodic interest payments, and (2) payment of par value at maturity. When the stated interest rate is less than the effective-interest rate, bonds will sell at a discount. This means that when the bond matures, the investor will receive more cash than was paid for the bond when it was purchased. The discount on the bond compensates the investor for the difference between a stated interest rate that is less than the effective rate of interest. The JCPenney bonds sold at a “deep discount” because the stated rate of interest was zero. If investors want 15% effective interest, they would be willing to pay only $326.90 for a $1,000 JCPenney bond; the present value of the bond is computed as follows:

|  |  |
| --- | --- |
| **Principal**: $1,000 x.3269 = $326.90 |  |

Req. 2

|  |  |  |
| --- | --- | --- |
| **Principal:** | $400,000,000 x 0.3269 = | $130,760,000 |

The bonds would sell for 32.69% of par value, which is $130,760,000 for bonds with a $400,000,000 face value.

*CRITICAL THINKING CASES*

**CP10–5.**

People invest in different securities for a variety of reasons. Bondholders are interested in fixed income and low risk. They are willing to give up higher returns for lower risk. While the president of the company may be confident of a high return on the investment, in reality there is always risk. It is not unethical to offer an investor a lower-risk, lower-return investment.

**CP10–6.**

Obviously, there is no right answer to this question. We have found that some students approach this question from the perspective that people’s jobs are more important than people’s money. We try to point out that both the current workers and the retired investors are dependent on income from the corporation in order to survive. Nevertheless, some students will not budge from the belief that workers have a higher priority than suppliers of capital. Once this part of the discussion winds down, we like to shift to the issues of fiduciary responsibility. Even if students believe that the needs of the workers should take priority, a question remains concerning the portfolio manager’s professional obligation. Given that he has been hired to protect the interests of the investors, how high a priority can be placed on another group that will be affected by a potential bankruptcy?

*FINANCIAL REPORTING AND ANALYSIS PROJECTS*

**CP10–7.**

The response to this case will depend on the companies selected by the students.

*CONTINUING CASE*

**CC10–1. (Dollar amounts in thousands)**

Req. 1

Interest:

|  |  |  |
| --- | --- | --- |
| $750,000 x 4% | = | $ 30,000 ÷ 2 = $15,000 |

Present value

|  |  |  |
| --- | --- | --- |
| $ 750,000 x .6730 | = | 504,750 |
| $ 15,000 x 16.3514 | = | 245,271 |
| Issue price |  | $750,021 |

The exact present value is $750,000. The $21 difference is due to rounding the present value factors at four digits.

Req. 2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | June 30  2011 |  | Dec. 31  2011 |  |
| Interest expense | $15,000 |  | $15,000 |  |

Req. 3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | June 30  2011 |  | Dec. 31  2011 |  |
| Cash paid | $15,000 |  | $15,000 |  |

Req. 4

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2011 |  | 2012 |  |
| Bonds payable | $750,000 |  | $750,000 |  |