MBA in Food \& Agribusiness Financial Management

## Long Term Liabilities

## What Is a Bond Issue?

A bond issue is the total value of bonds issued at one time


For example, a $\$ 1,000,000$ bond issue could consist of one thousand, $\$ 1,000$ bonds

## Prices of Bonds

Stated in terms of a percentage of face value

- Bonds selling at 100
- Sell at face or par value
- Bonds selling above 100
- Sell at a premium
- Bonds selling below 100
- Sell at a discount


## Bonds Issued at a Discount

Katakis Corporation issues $\$ 100,000$ of 9 percent, 5-year bonds at 96.149 on January 1, 20x4, when the market rate is $\mathbf{1 0}$ percent.

Record the issuance of the bonds at a discount:

$$
20 \mathrm{x} 4
$$

Jan. 1
Cash
96,149
Unamortized Bond Discount
3,851
Bonds Payable
Sold \$100,000 of 9\%, 5-year bonds at 96.149

## Interest and Amortization of a Bond Discount: Effective Interest Method

| Semiannual Interest Period | A <br> Carrying Value at Beginning of Period | B <br> Semiannual Interest Expense at $10 \%$ to Be Recorded* $(5 \% \times A)$ | C <br> Semiannual <br> Interest <br> Payment <br> to Bondholders | Amortization of Bond Discount$(B-C)$ | E <br> Unamortized <br> Bond <br> Discount at End of Period (E - D) | F |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  | Value |
|  |  |  |  |  |  | at End of |
|  |  |  |  |  |  | Period |
|  |  |  |  |  |  | ( $\mathrm{A}+\mathrm{D}$ ) |
| 0 |  |  |  |  | \$3,851 | \$ 96,149 |
| 1 | \$96,149 | \$4,807 | \$4,500 | \$307 | 3,544 | 96,456 |
| 2 | 96,456 | 4,823 | 4,500 | 323 | 3,221 | 96,779 |
| 3 | 96,779 | 4,839 | 4,500 | 339 | 2,882 | 97,118 |
| 4 | 97,118 | 4,856 | 4,500 | 356 | 2,526 | 97,474 |
| 5 | 97,474 | 4,874 | 4,500 | 374 | 2,152 | 97,848 |
| 6 | 97,848 | 4,892 | 4,500 | 392 | 1,760 | 98,240 |
| 7 | 98,240 | 4,912 | 4,500 | 412 | 1,348 | 98,652 |
| 8 | 98,652 | 4,933 | 4,500 | 433 | 915 | 99,085 |
| 9 | 99,085 | 4,954 | 4,500 | 454 | 461 | 99,539 |
| 10 | 99,539 | 4,961 $\dagger$ | 4,500 | 461 | - | 100,000 |

*Rounded to the nearest dollar. $\quad$ LLast period's interest expense equals $\$ 4,961(\$ 4,500+\$ 461)$; it does not equal $\$ 4,977$ ( $\$ 99,539 \times .05$ ) because of the cumulative effect of rounding.

## Bonds Issued at a Premium

Katakis Corporation issues $\$ 100,000$ of 9 percent, 5-year bonds for $\$ 104,100$ on January 1, 20x4, when the market rate is $\mathbf{8}$ percent.
Record the issuance of the bonds at a premium:
20x4
Jan. 1
Cash
104,100
Unamortized Bond Premium
Bonds Payable
Sold \$100,000 of 9\%, 5-year bonds at 104.1
(\$100,000 x 1.041 )

## Interest and Amortization of a Bond Premium: Effective Interest Method

TABLE 4. Interest and Amortization of a Bond Premium: Effective Interest Method

| Semiannual Interest Period | A <br> Carrying Value at Beginning of Period | B <br> Semiannual Interest Expense at 8\% to Be Recorded* $(4 \% \times A)$ |  | D <br> Amortization of Bond Premium ( $\mathrm{C}-\mathrm{B}$ ) | E <br> Unamortized Bond Premium at End of Period ( $\mathrm{E}-\mathrm{D}$ ) | F <br> Carrying Value at End of Period ( $A$ - D) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0 |  |  |  |  | \$4,100 | \$104,100 |
| 1 | \$104,100 | \$4,164 | \$4,500 | \$336 | 3,764 | 103,764 |
| 2 | 103,764 | 4,151 | 4,500 | 349 | 3,415 | 103,415 |
| 3 | 103,415 | 4,137 | 4,500 | 363 | 3,052 | 103,052 |
| 4 | 103,052 | 4,122 | 4,500 | 378 | 2,674 | 102,674 |
| 5 | 102,674 | 4,107 | 4,500 | 393 | 2,281 | 102,281 |
| 6 | 102,281 | 4,091 | 4,500 | 409 | 1,872 | 101,872 |
| 7 | 101,872 | 4,075 | 4,500 | 425 | 1,447 | 101,447 |
| 8 | 101,447 | 4,058 | 4,500 | 442 | 1,005 | 101,005 |
| 9 | 101,005 | 4,040 | 4,500 | 460 | 545 | 100,545 |
| 10 | 100,545 | 3,955 $\dagger$ | 4,500 | 545 | - | 100,000 |

[^0]†Last period's interest expense equals \$3,955 (\$4,500 - \$545); it does not equal \$4,022 $(\$ 100,545 \times .04)$ because of the cumulative effect of rounding.

## Callable Bonds Illustrated

> Katakis Corporation can call or retire at 105 the $\$ 100,000$ of bonds it issued at a premium (104.1). It decides to do so on July $1,20 \times 7$. The entry for the required interest payment and amortization of the premium has already been made.

Record the retirement of the bonds:

$$
\begin{array}{llr}
20 \times 7 & & 100,000 \\
\text { July } 1 & \text { Bonds Payable } & 1,447 \\
& \text { Unamortized Bond Premium } & 3,553 \\
& \text { Loss on Retirement of Bonds } & \\
& \text { Cash } &
\end{array}
$$

$$
105,000
$$

The loss occurs because the call price of the bonds is greater than the carrying value

## Convertible Bonds Illustrated

Katakis Corporation issued \$100,000 of convertible bonds on January 1, $20 \times 4$, that can be converted to 40 shares of common stock for each $\$ 1,000$ bond. The bondholders decide to convert all the bonds to $\$ 8$ par value common stock on July 1, 20x7.

## Record the bond conversion:

20x7
July 1 Bonds Payable
Common Stock

100,000
Unamortized Bond Premium 1,447
Additional Paid-in Capital


Converted 9\% bonds payable into $\$ 8$ par value common stock at a rate of 40 shares for each $\$ 1,000$ bond

> No loss or gain is recorded because the bond liability and the associated unamortized discount or premium are written off the books.
 P2.) Abel Corporation has $\$ 10,000,000$ of 10.5 percent, 20 -year bonds dated ten years the bonds are callable at 104 , and each $\$ 1$, ooo bond is convertible into 25 shares of $\$ 20$ par value common stock. The company's fiscal year ends on December 31. It uses the straight-line method to amortize bond premiums or discounts.

## Requived

1. Assume the bonds are issued at 103 on June $1,20 \times 7$.
a. How much cash is received?
b. How much is Bonds Payable?
c. What is the difference between a and $b$ called and how much is it?
d. With regard to the bond interest payment on November 30, $20 \times 7$ :
(1) How much cash is paid in interest?
(2) How much is the amortization?
(3) How much is interest expense?
2. Assume the bonds are issued at 97 on June $1,20 \times 7$.
a. How much cash is received?
b. How much is Bonds Payable?
c. What is the difference between a and $b$ called and how much is it?
d. With regard to the bond interest payment on November 30, $20 \times 7$ :
(1) How much cash is paid in interest?
(2) How much is the amortization?
(3) How much is interest expense?
3. Assume the issue price in requirement 1 and that the bonds are called and retired ten years later.
a. How much cash will have to be paid to retire the bonds?
b. Is there a gain or loss on the retirement, and if so, how much is it?
4. Assume the issuc price in requirement 2 and that the bonds are converted to common stock ten years later.
a. Is there a gain or loss on the conversion, and if so, how much is it?
b. How many shares of common stock are issued in exchange for the bonds?
c. In dollar amounts, how does this transaction affect the total liabilities and the total stockholders' equity of the company? In your answer, show the effects on four accounts.
5. Assume that after ten years, market interest rates have dropped significantly and that the price on the company's common stock has risen significantly. Also assume that management wants to improve its credit rating by reducing its debt to equity ratio and that it needs what cash it has for expansion. Which approach would management prefer-the approach and result in requirement 3 or 4? Explain your answer. What would be a disadvantage of the approach you chose?

## Answer

1. Bonds issued at 103 on June $1,20 \times 7$
a. Calculation of cash received:
$\$ 10,000,000 \times 1.03=\$ 10,300,000$
b. Amount of Bonds Payable: $\$ 10,000,000$
c. Difference between $\boldsymbol{a}$ and $b$ explained:

The difference o $\$ 300,000$ between $a$ and $b$ is the bond premium.
d. Interest components
(1) Cash paid in interest:

| $\mathbf{\$ 1 0 , 0 0 0 , 0 0 0} \times 0.105$ | $\times$ | 6 | 12 | $\mathbf{~} 525,000$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |

(2) Amortization computed:
$\$ 300,000 \div(20$ years $\times 2)=\quad \mathbf{7 , 5 0 0}$
(3) Interest expense computed:


## Answer (cont.)

2. Bonds issued at 97 on June $1,20 \times 7$
a. Calculation of cash received:
$\$ 10,000,000 \times 0.97=\$ 9,700,000$
b. Amount of Bonds Payable: $\$ 10,000,000$
c. Difference between $a$ and $b$ explained:

The difference o $\$ 300,000$ between $a$ and $b$ is the bond discount.
d. Interest components
(1) Cash paid in interest:
$\$ 10,000,000 \times 0.105 \times 6 \times 12=$
Expense
Amortis. Disc.
Cash/Int.Payab


## Answer (cont.)

3. Bonds called and retired ten years later
a. Cash to retire bonds:
Call amount $\$ 10,000,000 \times 1.04=$
b. Gain or loss calculated: Ten years later: half of the

Carrying value: premium has been amortised
$\$ 10,000,000+(\$ 300,000-\$ 150,000)=1010,150,000$

Since the call takes place after 10 years of a 20 -year period, 50 percent or $\$ 150,000$ of the $\$ 300,000$ premium has been amor-
tized. A loss exists because the call amount exceeds the carrying value of the bonds. Loss amount $=$

## Answer (cont.)

4. Bonds converted to common stock ten years later
a. No gain or loss occurs in a bond conversion because the issued stock is recorded at the carrying value of the bonds that are converted.
b. Numbers of shares of common stock computed:

10,000, \$1,000 bonds $\times 25$ shares $=250,000$ shares
c. Effects of liabilities and stockholders' equity shown:

Bonds payable and its accompanying unamortized discount will be reduced in the liabilities. Common stock and additional paid-in capital will be increased in stockholders' equity.
Decrease in liabilities
Bonds payable

Bond carrying value

| $\$ 10,000,000$ |
| ---: |
| $\left(\begin{array}{r}150,000\end{array}\right)$ |
| $\$ 9,850,000$ |

Since the call takes places after 10 years of a 20 -year period, 50 percent or $\$ 150,000$ of the $\$ 300,000$ discount remains to be amortized.
Increase in stockholders' equity

| Common stock | 250,000 | shares | $\times$ | \$20 | Difference as |  | 5,000,000 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Additional paid-in capital |  |  |  |  | paid in capital | $\bigcirc$ | 4,850,000 |
| Total common stock issue amount |  |  |  |  |  | \$ | 9,850,000 |

## Answer (cont.)

5. User Insight: Strategy of calling bonds when stock price has risen

The company can improve its debt to equity ratio without using cash by calling the bonds. Since the price of the company's stock has risen, the bondholders will be better off electing to convert the bonds into common stock than selling them back to the company at the call price. The bondholders then have the option of keeping or selling the stock in the general market.

## Interest and Amortization of a Bond Discount: Effective Interest Method

| Semiannual Interest Period | A <br> Carrying Value at Beginning of Period | B <br> Semiannual Interest Expense at $10 \%$ to Be Recorded* $(5 \% \times A)$ | C <br> Semiannual <br> Interest <br> Payment <br> to Bondholders | Amortization of Bond Discount$(B-C)$ | E <br> Unamortized <br> Bond <br> Discount at End of Period (E - D) | F |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  | Value |
|  |  |  |  |  |  | at End of |
|  |  |  |  |  |  | Period |
|  |  |  |  |  |  | ( $\mathrm{A}+\mathrm{D}$ ) |
| 0 |  |  |  |  | \$3,851 | \$ 96,149 |
| 1 | \$96,149 | \$4,807 | \$4,500 | \$307 | 3,544 | 96,456 |
| 2 | 96,456 | 4,823 | 4,500 | 323 | 3,221 | 96,779 |
| 3 | 96,779 | 4,839 | 4,500 | 339 | 2,882 | 97,118 |
| 4 | 97,118 | 4,856 | 4,500 | 356 | 2,526 | 97,474 |
| 5 | 97,474 | 4,874 | 4,500 | 374 | 2,152 | 97,848 |
| 6 | 97,848 | 4,892 | 4,500 | 392 | 1,760 | 98,240 |
| 7 | 98,240 | 4,912 | 4,500 | 412 | 1,348 | 98,652 |
| 8 | 98,652 | 4,933 | 4,500 | 433 | 915 | 99,085 |
| 9 | 99,085 | 4,954 | 4,500 | 454 | 461 | 99,539 |
| 10 | 99,539 | 4,961 $\dagger$ | 4,500 | 461 | - | 100,000 |

*Rounded to the nearest dollar. $\quad$ LLast period's interest expense equals $\$ 4,961(\$ 4,500+\$ 461)$; it does not equal $\$ 4,977$ ( $\$ 99,539 \times .05$ ) because of the cumulative effect of rounding.

## Bond Amortization - effective Interest Method

| Column A <br> Carrying value $=$ Face value - <br> Unamortized bond discount |  | Column B - Use market interest rate$(\$ 96,149 \times .10 \times 6 / 12=\$ 4,807)$ |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Column C - Use face interest rate on bond$(\$ 100,00 \times .09 \times 6 / 12=\$ 4,500)$ |  |  |  |
| $A^{\downarrow}$ |  | B | $\mathrm{C}$ | D | E | F |
| Semiannual Interest Period | Carrying Value at Beginning of Period | Semiannual Interest Expense at 10\% to be Recorded (5\% x A) | Semiannual Interest to be Paid to Bondholders (4.5\% x $\$ 100,000)$ | Amortization of Bond Discount (B-C) | Unamortized Bond Discount at End of Period (E-D) | Carrying Value at End of Period (A + D) |
| 0 |  |  |  |  | \$3,851 | \$96,149 |
| 1 | \$96,149 | \$4,807 | \$4,500 |  |  |  |

## Bond Amortization - effective Interest Method



> Carrying value at beg. of period + Amort. during the period $(\$ 96,149+\$ 307=\$ 96,456)$

|  | A | B | c | D | E | F |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Semiannual Interest Period | Carrying Value at Beginning of Period | Semiannual Interest Expense at 10\% to be Recorded (5\% x A) | Semiannual Interest to be Paid to Bondholders (4.5\% x $\$ 100,000$ ) | $\begin{aligned} & \text { Amortization } \\ & \text { of Bond } \\ & \text { Discount } \\ & \text { (B-C) } \\ & \hline \end{aligned}$ | Unamortized Bond Discount at End of Period ( $\mathrm{E}-\mathrm{D}$ ) | Carrying Value at End of Period ( $\mathrm{A}+\mathrm{D}$ ) |
| 0 |  |  |  |  | \$3,851 | \$96,149 |
| 1 | \$96,149 | \$4,807 | \$4,500 | \$307 | 3,544 | 96,456 |
|  |  |  | Bond discount at beg. of period - <br> Current pd amort. $(\$ 3,851-\$ 307=\$ 3,544)$ |  |  |  |

## Bond Amortization - effective Interest Method

## Record first semiannual interest payment and amortization of bond discount:

20x4<br>July 1 Bond Interest Expense<br>4,807<br>Unamortized Bond Discount<br>307<br>Cash (or Interest Payable)<br>Paid (or accrued) semiannual interest to bondholders and amortized discount on $9 \%$, 5 -year bonds

## Effective Interest Method

P 3. Julio Corporation has $\$ 8,000,000$ of 9.5 percent, 25 -year bonds dated March 1, 20x7, with interest payable on February 28 and August 31. The company's fiscal year end is February 28. It uses the effective interest method to amortize bond premiums or discounts. (Round amounts to the nearest dollar.)

## Required

1. Assume the bonds are issued at 102.5 on March 1, 20x7, to yield an effective interest rate of 9.2 percent. Prepare entries in journal form for March 1, 20x7, August 31, 20x7, and February 28, 20x8.
2. Assume the bonds are issued at 97.5 on March 1,2007 , to yield an effective interest rate of 9.8 percent. Prepare entries in journal form for March 1, 20x7, August 31, 20x7, and February 28, 20x8.
3. User Insight: Explain the role that market interest rates play in causing a premium in requirement $\mathbf{l}$ and a discount in requirement 2 .

## Answer - Premium Amortisation

|  |  | A | B | C | D | E | F |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| /a | Semiannual <br> Interest period | CV bond b/fw | Semiannual interest exp'n | Semiannual interest paymnt | amortisation | unamortised bond premium | CV bond c/fw |
|  |  |  | CVx9.2\%x6/12 | $8,000,000 \times 9.5 \% \times 6 / 12$ | (C.B) | (E-D) | (A.D) |
|  | March 12007 |  |  |  |  | 200,000 | 8,200,000 |
| 1 | Aug 312007 | 8,200,000 | 377,200 | 380,000 | 2,800 | 197,200 | 8,197,200 |
| 2 | Febr 282008 | 8,197,200 | 377,071 | 380,000 | 2,929 | 194,271 | 8,194,271 |
| 3 |  | 8,194,271 | 376,936 | 301,001 | 3,165 | 191,207 | 8,191,207 |
| 4 |  | 8,191,207 | 376,796 | 380,002 | 3,206 | 188,000 | 8,188,000 |
| 5 |  | 8,188,000 | 376,648 | 380,003 | 3,355 | 184,645 | 8,184,645 |
| 6 |  | 8,184,645 | 376,494 | 380,004 | 3,510 | 181,135 | 8,181,135 |
| 7 |  | 8,181,135 | 376,332 | 380,005 | 3,673 | 177,462 | 8,177,462 |
| 8 |  | 8,177,462 | 376,163 | 380,006 | 3,843 | 173,619 | 8,173,619 |
| 9 |  | 8,173,619 | 375,986 | 380,007 | 4,021 | 169,599 | 8,169,599 |
| 10 |  | 8,169,599 | 375,802 | 380,008 | 4,206 | 165,392 | 8,165,392 |

## Answer - Premium Amortisation




## Answer - Discount Amortisation

|  |  | A | B | C | D | E | F |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| /a | Semiannual Interest period | CV bond b/fw | Semiannual interest exp'n | Semiannual interest paymnt | amortisation | unamortised bond discount | CV bond c/fw |
|  |  |  | CVx9.8\%x6/12 | $8,000,000 \times 9.5 \% \times 6 / 12$ | ( $\mathrm{B}-\mathrm{C}$ ) | (E-D) | $(\mathrm{A}+\mathrm{D})$ |
| U | March 12007 |  |  |  |  | 200,000 | 7,800,000 |
| 1 | Aug 312007 | 7,800,000 | 382,200 | 380,000 | 2,200 | 197,800 | 7,802,200 |
| 2 | Febr 282008 | 7,802,200 | 382,308 | 380,000 | 2,308 | 195,492 | 7,804,508 |
| 3 |  | 7,804,508 | 382,421 | 380, 101 | 2,420 | 193, D/2 | 7,806,928 |
| 4 |  | 7,806,928 | 382,539 | 380,002 | 2,537 | 190,535 | 7,809,465 |
| 5 |  | 7,809,465 | 382,664 | 380,003 | 2,661 | 187,874 | 7,812,126 |
| 6 |  | 7,812,126 | 382,794 | 380,004 | 2,790 | 185,084 | 7,814,916 |
| 7 |  | 7,814,916 | 382,931 | 380,005 | 2,926 | 182,158 | 7,817,842 |
| 8 |  | 7,817,842 | 383,074 | 380,006 | 3,068 | 179,090 | 7,820,910 |
| 9 |  | 7,820,910 | 383,225 | 380,007 | 3,218 | 175,872 | 7,824,128 |
| 10 |  | 7.824 .128 | 383.382 | 380.008 | 3.374 | 172.498 | 7.827 .502 |

## Answer - Discount Amortisation


3. User Insight: Role of market interest rates

Market interest rates play a role in creating the premium and discount in the previous example. When market rates are above the face interest rate, a discount exists. When market rates are below the face interest rate, a premium exists.

## Bonds Issued at a Discount and a Premium-Effective Interest Method

P 4. Waxman Corporation issued bonds twice during $20 \times 7$. A summary of the transactions involving the bonds follows.

20x7
Jan. 1 Issued $\$ 6,000,000$ of 9.9 percent, ten-year bonds dated January $1,20 \times 7$, with interest payable on June 30 and December 31. The bonds were sold at 102.6 , resulting in an effective interest rate of 9.4 percent.

Mar. 1 Issued $\$ 4,000,000$ of 9.2 percent, ten-year bonds dated March 1, $20 \times 7$, with interest payable March 1 and September 1. The bonds were sold at 98.2, resulting in an effective interest rate of 9.5 percent.

June $\quad 30$ Paid semiannual interest on the January $l$ issue and amortized the premium, using the effective interest method.
Sept. 1 Paid semiannual interest on the March 1 issue and amortized the
Dec. 31 Paid semiannual interest on the January 1 issue and amortized the premium, using the effective interest method.
31 Made an end-of-year adjusting entry to accrue interest on the March 1 issue and to amortize two-thirds of the discount applicable to the second interest period.
20x8
Mar. 1 Paid semiannual interest on the March 1 issue and amortized the remainder of the discount applicable to the second interest period.

## Required

1. Prepare entries in journal form to record the bond transactions. (Round amounts to the nearest dollar.)
2. Describe the effect on profitability and liquidity by answering the following questions.
a. What is the total interest expense in $20 \times 7$ for each of the bond issues?
b. What is the total cash paid in 20 x 7 for each of the bond issues?
c. What differences, if any, do you observe and how do you explain them?

## Answer - Premium Amortisation with Effective Interest

|  |  | A | B | C | D | E | F |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| a/a | Semiannual Interest Period | CV bond b/fw | Semiannual Interest Expense | Semiannual Interest Payment | Amortisation | Unamortised Bond Premium | CV bond c/fw |
|  |  |  | CVx9,4\% $\times 1 / 2$ | $6.000 .000 \times 9,9 \% \times 1 / 2$ | C-B | E. D | A - D |
|  |  |  |  |  |  | 156.000 | 6.156.000 |
| 1 | Jun. 30 | 6.156 .000 | 289.332 | 297.000 | 7.668 | 148.332 | 6.148.332 |
| 2 | Dec. 31 | 6.148.332 | 288.972 | 297.000 | 8.028 | 140.304 | 6.140.304 |
| 3 |  | 0.140 .304 | 200.094 | 297.000 | 0.400 | 131.090 | 0.131 .090 |
| 4 |  | 6.131 .898 | 288.199 | 297.000 | 8.801 | 123.097 | 6.123.097 |
| 5 |  | 6.123 .097 | 287.786 | 297.000 | 9.214 | 113.883 | 6.113.883 |
| 6 |  | 6.113 .883 | 287.352 | 297.000 | 9.648 | 104.235 | 6.104 .235 |
| 7 |  | 6.104.235 | 286.899 | 297.000 | 10.101 | 94.134 | 6.094.134 |
| 8 |  | 6.094 .134 | 286.424 | 297.000 | 10.576 | 83.558 | 6.083 .558 |
| 9 |  | 6.083 .558 | 285.927 | 297.000 | 11.073 | 72.486 | 6.072 .486 |
| 10 |  | 6.072 .486 | 285.407 | 297.000 | 11.593 | 60.893 | 6.060 .893 |

## Answer - Discount Amortisation with Effective Interest

|  |  | A | B | C | D | E | F |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| a/a | $\begin{gathered} \hline \text { Semiannual } \\ \text { Interest } \\ \text { Period } \\ \hline \end{gathered}$ | CV bond b/fw | Semiannual Interest Expense | Semiannual Interest Payment | Amortisation | Unamortised Bond Discount | CV bond c/fw |
|  |  |  | CV $\times 9,5 \% \times 1 / 2$ | $4.000 .000 \times 9,2 \% \times 1 / 2$ | B - C | E-D | A + D |
|  |  |  |  |  |  | \$/2.0U0 | \$3.928.000 |
| 1 | Sep. 1 | \$3.928.000 | \$186.580 | \$184.000 | \$2.580 | $\$ 69.420$ | \$3.930.580 |
| 2 | March. 1 | \$3.930.580 | \$186.703 | \$184.000 | $\$ 2.703$ | \$66.717 | \$3.933.283 |
| ${ }^{3}$ |  | \$0.93J.205 | \$100.031 | \$104.000 | v2.031 | y03.007 | 23.930.115 |
| 4 |  | \$3.936.113 | \$186.965 | \$184.000 | \$2.965 | \$60.921 | \$3.939.079 |
| 5 |  | \$3.939.079 | \$187.106 | \$184.000 | $\$ 3.106$ | \$57.815 | \$3.942.185 |
| 6 |  | \$3.942.185 | \$187.254 | \$184.000 | $\$ 3.254$ | \$54.561 | \$3.945.439 |
| 7 |  | \$3.945.439 | \$187.408 | \$184.000 | \$3.408 | \$51.153 | \$3.948.847 |
| 8 |  | \$3.948.847 | \$187.570 | \$184.000 | \$3.570 | \$47.583 | \$3.952.417 |
| 9 |  | \$3.952.417 | \$187.740 | \$184.000 | $\$ 3.740$ | \$43.843 | \$3.956.157 |
| 10 |  | \$3.956.157 | \$187.917 | \$184.000 | \$3.917 | \$39.925 | \$3.960.075 |

## Answer (cont.)

| $\begin{gathered} \hline \$ 6,000,000 \\ \times 1.026 \\ \hline \end{gathered}$ |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 20x7 |  |  |  |  |  |
| Jan. | 1 | Cash | 6.156.000 |  |  |
|  |  | Unamortized Bond Premium |  | 156.000 |  |
|  |  | Bonds Payable |  | 6.000.000 |  |
|  |  | Sold 9.9\%, 10-year bonds at 102.6 |  |  |  |
| Mar. | 1 | Cash | 3.928 .000 | - | \$4,000,000 |
|  |  | Unamortized Bond Discount | 72.000 |  | + 0.982 |
|  |  | Bonds Payable |  | 4.000.000 |  |
|  |  | Sold 9.2\%, 10-year bonds at 98.2 |  |  |  |

## Answer (cont.)

| June | 30 | Bond Interest Expense | 289.332 |  |
| :--- | :--- | :--- | ---: | :--- |
|  |  | Unamortized Bond Premium | 7.668 |  |
|  |  | Cash |  | 297.000 |
|  |  |  | Paid semiannual interest on 9.9\%, 10-year |  |
|  |  | bonds and amortized the premium |  |  |


| Sept. | 1 | Bond Interest Expense | 186.580 |  |
| :--- | :--- | :--- | ---: | ---: |
|  |  | Unamortized Bond Discount |  | 2.580 |
|  |  | Cash |  | 184.000 |
|  |  | Paid semiannual interest on 9.2\%, 10-year |  |  |
|  |  | bonds and amortized the discount |  |  |

## Answer (cont.)



## Answer (cont.)



## Answer (cont.)




[^0]:    *Rounded to the nearest dollar.

