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University of Puerto Rico<br>Río Piedras Campus<br>Business School



AACSB
ACCREDITED

## LIABILITIES:

## DEFINITION

It is a present responsibility to sacrifice assets in the future because of a transaction or other event that happened in the past.

## Characteristics

$>$ Are probable, future sacrifices (assets or benefits)
$>$ Arise from present obligations
$>$ Result from past transactions or events

This presentation contains information, in addition to the material prepared and provided by the professor, from:

1. Financial Accounting, David Spiceland, 6th Ed., McGraw-Hill
2. Intermediate Accounting, David Spiceland, 11th Ed., McGraw-Hill
3. Intermediate Accounting, Donald Kieso, 18th Ed., Wiley
4. Other: Official Websites

## NON CURRENT LIABILITIES:

It takes more than one period to pay the full amount or PRINCIPAL

## LIABILITIES:

## ORIGIN

1. Loans, Borrowings, Notes, Bonds) (\%)
2. Issue Bonds Payable
3. Leases
4. Pensions

## LIABILITIES: CONTINGENT LIABILITIES

$>$ Accrued if = Record Journal Entry

- Probable
- Reasonable estimate
- Disclosure
> Journal Entry
Dr. Contingent Loss
Cr. Contingent Liability
$>$ Disclosure if
- Reasonably Possible


## ISSUING/SELLING A BOND

## BORROW TO MANY INVESTORS

## NON CURRENT LIABILITIES: BONDS PAYABLE

Ratings agencies research the financial health of each bond issuer (including issuers of municipal bonds) and assign ratings to the bonds being offered. Each agency has a similar hierarchy to help investors assess that bond's credit quality compared to other bonds. Bonds with a rating of BBB- (on the Standard \& Poor's and Fitch scale) or Baa3 (on Moody's) or better are considered "investment-grade." Bonds with lower ratings are considered "speculative" and often referred to as "high-yield" or "junk" bonds. https://www.fidelity.com/learning-center/investment-products/fixed-income-bonds/bond-ratings

| Investment grade | Moody's | Standard \& Poor's | Fitch |
| :--- | :---: | :---: | :---: |
| Strongest | Aaa | AAA | AAA |
|  | Aa1 | AA + | AA + |
|  | Aa2 | AA | AA |
|  | Aa3 | AA- | AA- |
|  | A1 | A+ | A+ |
|  | A2 | A | A |
|  | A3 | BBB + | A- |
|  | Baa1 | BBB | BBB |
|  | Baa2 | BBB- | BBB- |

# NON CURRENT LIABILITIES: BONDS PAYABLE 

## EXAMPLE:


\$ ....
$+$
PRESENT VALUE FUTURE CASH FLOWS: PRINCIPAL
 Yn

# NON CURRENT LIABILITIES: BONDS PAYABLE 

## ISSUED AT PAR VALUE

## Then:

1. Bond Price $=$ Principal
2. Coupon Rate $=$ Market Rate
3. Interest Expense $=$ Cash Interest Payment

# NON CURRENT LIABILITIES: BONDS PAYABLE 

## ISSUED AT PREMIUM

## Then:

1. Bond Price > Principal
2. Coupon Rate $>$ Market Rate
3. Interest Expense $\neq$ Cash Interest Payment

# NON CURRENT LIABILITIES: BONDS PAYABLE 

## ISSUED AT DISCOUNT

## Then:

1. Bond Price < Principal
2. Coupon Rate < Market Rate
3. Interest Expense $\neq$ Cash Interest Payment

| P e r | PRESENT VALUE OF ORDINARY ANNUITY (annuity in arrears -- end of period payments) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ${ }^{\circ}$ | RATE PER PERIOD |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| s | 0.25\% | 0.50\% | 0.75\% | 1.00\% | 1.50\% | 2.00\% | 2.50\% | 3.00\% | 4.00\% | 5.00\% | 6.00\% | 7.00\% | 8.00\% | 9.00\% | 10.00\% | 11.00\% | 12.00\% |
| 1 | 0.99751 | 0.99502 | 0.99256 | 0.99010 | 0.98522 | 0.98039 | 0.97561 | 0.97087 | 0.96154 | 0.95238 | 0.94340 | 0.93458 | 0.92593 | 0.91743 | 0.90909 | 0.90090 | 0.89286 |
| 2 | 1.99252 | 1.98510 | 1.97772 | 1.97040 | 1.95588 | 1.94156 | 1.92742 | 1.91347 | 1.88609 | 1.85941 | 1.83339 | 1.80802 | 1.78326 | 1.75911 | 1.73554 | 1.71252 | 1.69005 |
| 3 | 2.98506 | 2.97025 | 2.95556 | 2.94099 | 2.91220 | 2.88388 | 2.85602 | 2.82861 | 2.77509 | 2.72325 | 2.67301 | 2.62432 | 2.57710 | 2.53129 | 2.48685 | 2.44371 | 2.40183 |
| 4 | 3.97512 | 3.95050 | 3.92611 | 3.90197 | 3.85438 | 3.80773 | 3.76197 | 3.71710 | 3.62990 | 3.54595 | 3.46511 | 3.38721 | 3.31213 | 3.23972 | 3.16987 | 3.10245 | 3.03735 |
| 5 | 4.96272 | 4.92587 | 4.88944 | 4.85343 | 4.78264 | 4.71346 | 4.64583 | 4.57971 | 4.45182 | 4.32948 | 4.21236 | 4.10020 | 3.99271 | 3.88965 | 3.79079 | 3.69590 | 3.60478 |
| 6 | 5.94785 | 5.89638 | 5.84560 | 5.79548 | 5.69719 | 5.60143 | 5.50813 | 5.41719 | 5.24214 | 5.07569 | 4.91732 | 4.76654 | 4.62288 | 4.48592 | 4.35526 | 4.23054 | 4.11141 |
| 7 | 6.93052 | 6.86207 | 6.79464 | 6.72819 | 6.59821 | 6.47199 | 6.34939 | 6.23028 | 6.00205 | 5.78637 | 5.58238 | 5.38929 | 5.20637 | 5.03295 | 4.86842 | 4.71220 | 4.56376 |
| 8 | 7.91074 | 7.82296 | 7.73661 | 7.65168 | 7.48593 | 7.32548 | 7.17014 | 7.01969 | 6.73274 | 6.46321 | 6.20979 | 5.97130 | 5.74664 | 5.53482 | 5.33493 | 5.14612 | 4.96764 |
| 9 | 8.88852 | 8.77906 | 8.67158 | 8.56602 | 8.36052 | 8.16224 | 7.97087 | 7.78611 | 7.43533 | 7.10782 | 6.80169 | 6.51523 | 6.24689 | 5.99525 | 5.75902 | 5.53705 | 5.32825 |
| 10 | 9.86386 | 9.73041 | 9.59958 | 9.47130 | 9.22218 | 8.98259 | 8.75206 | 8.53020 | 8.11090 | 7.72173 | 7.36009 | 7.02358 | 6.71008 | 6.41766 | 6.14457 | 5.88923 | 5.65022 |
| 11 | 10.83677 | 10.67703 | 10.52067 | 10.36763 | 10.07112 | 9.78685 | 9.51421 | 9.25262 | 8.76048 | 8.30641 | 7.88687 | 7.49867 | 7.13896 | 6.80519 | 6.49506 | 6.20652 | 5.93770 |
| 12 | 11.80725 | 11.61893 | 11.43491 | 11.25508 | 10.90751 | 10.57534 | 10.25776 | 9.95400 | 9.38507 | 8.86325 | 8.38384 | 7.94269 | 7.53608 | 7.16073 | 6.81369 | 6.49236 | 6.19437 |
| 13 | 12.77532 | 12.55615 | 12.34235 | 12.13374 | 11.73153 | 11.34837 | 10.98318 | 10.63496 | 9.98565 | 9.39357 | 8.85268 | 8.35765 | 7.90378 | 7.48690 | 7.10336 | 6.74987 | 6.42355 |
| 14 | 13.74096 | 13.48871 | 13.24302 | 13.00370 | 12.54338 | 12.10625 | 11.69091 | 11.29607 | 10.56312 | 9.89864 | 9.29498 | 8.74547 | 8.24424 | 7.78615 | 7.36669 | 6.98187 | 6.62817 |
| 15 | 14.70420 | 14.41662 | 14.13699 | 13.86505 | 13.34323 | 12.84926 | 12.38138 | 11.93794 | 11.11839 | 10.37966 | 9.71225 | 9.10791 | 8.55948 | 8.06069 | 7.60608 | 7.19087 | 6.81086 |
| 16 | 15.66504 | 15.33993 | 15.02431 | 14.71787 | 14.13126 | 13.57771 | 13.05500 | 12.56110 | 11.65230 | 10.83777 | 10.10590 | 9.44665 | 8.85137 | 8.31256 | 7.82371 | 7.37916 | 6.97399 |
| 17 | 16.62348 | 16.25863 | 15.90502 | 15.56225 | 14.90765 | 14.29187 | 13.71220 | 13.16612 | 12.16567 | 11.27407 | 10.47726 | 9.76322 | 9.12164 | 8.54363 | 8.02155 | 7.54879 | 7.11963 |
| 18 | 17.57953 | 17.17277 | 16.77918 | 16.39827 | 15.67256 | 14.99203 | 14.35336 | 13.75351 | 12.65930 | 11.68959 | 10.82760 | 10.05909 | 9.37189 | 8.75563 | 8.20141 | 7.70162 | 7.24967 |
| 19 | 18.53320 | 18.08236 | 17.64683 | 17.22601 | 16.42617 | 15.67846 | 14.97889 | 14.32380 | 13.13394 | 12.08532 | 11.15812 | 10.33560 | 9.60360 | 8.95011 | 8.36492 | 7.83929 | 7.36578 |
| 20 | 19.48449 | 18.98742 | 18.50802 | 18.04555 | 17.16864 | 16.35143 | 15.58916 | 14.87747 | 13.59033 | 12.46221 | 11.46992 | 10.59401 | 9.81815 | 9.12855 | 8.51356 | 7.96333 | 7.46944 |
| 21 | 20.43340 | 19.88798 | 19.36280 | 18.85698 | 17.90014 | 17.01121 | 16.18455 | 15.41502 | 14.02916 | 12.82115 | 11.76408 | 10.83553 | 10.01680 | 9.29224 | 8.64869 | 8.07507 | 7.56200 |
| 22 | 21.37995 | 20.78406 | 20.21121 | 19.66038 | 18.62082 | 17.65805 | 16.76541 | 15.93692 | 14.45112 | 13.16300 | 12.04158 | 11.06124 | 10.20074 | 9.44243 | 8.77154 | 8.17574 | 7.64465 |
| 23 | 22.32414 | 21.67568 | 21.05331 | 20.45582 | 19.33086 | 18.29220 | 17.33211 | 16.44361 | 14.85684 | 13.48857 | 12.30338 | 11.27219 | 10.37106 | 9.58021 | 8.88322 | 8.26643 | 7.71843 |
| 24 | 23.26598 | 22.56287 | 21.88915 | 21.24339 | 20.03041 | 18.91393 | 17.88499 | 16.93554 | 15.24696 | 13.79864 | 12.55036 | 11.46933 | 10.52876 | 9.70661 | 8.98474 | 8.34814 | 7.78432 |
| 25 | 24.20547 | 23.44564 | 22.71876 | 22.02316 | 20.71961 | 19.52346 | 18.42438 | 17.41315 | 15.62208 | 14.09394 | 12.78336 | 11.65358 | 10.67478 | 9.82258 | 9.07704 | 8.42174 | 7.84314 |
| 30 | 28.86787 | 27.79405 | 26.77508 | 25.80771 | 24.01584 | 22.39646 | 20.93029 | 19.60044 | 17.29203 | 15.37245 | 13.76483 | 12.40904 | 11.25778 | 10.27365 | 9.42691 | 8.69379 | 8.05518 |
| 35 | 33.47243 | 32.03537 | 30.68266 | 29.40858 | 27.07559 | 24.99862 | 23.14516 | 21.48722 | 18.66461 | 16.37419 | 14.49825 | 12.94767 | 11.65457 | 10.56682 | 9.64416 | 8.85524 | 8.17550 |
| 40 | 38.01986 | 36.17223 | 34.44694 | 32.83469 | 29.91585 | 27.35548 | 25.10278 | 23.11477 | 19.79277 | 17.15909 | 15.04630 | 13.33171 | 11.92461 | 10.75736 | 9.77905 | 8.95105 | 8.24378 |
| 50 | 46.94617 | 44.14279 | 41.56645 | 39.19612 | 34.99969 | 31.42361 | 28.36231 | 25.72976 | 21.48218 | 18.25593 | 15.76186 | 13.80075 | 12.23348 | 10.96168 | 9.91481 | 9.04165 | 8.30450 |


| P e r | PRESENT VALUE OF \$1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0 | RATE PER PERIOD |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| s | 0.25\% | 0.50\% | 0.75\% | 1.00\% | 1.50\% | 2.00\% | 2.50\% | 3.00\% | 4.00\% | 5.00\% | 6.00\% | 7.00\% | 8.00\% | 9.00\% | 10.00\% | 11.00\% | 12.00\% |
| 1 | 0.99751 | 0.99502 | 0.99256 | 0.99010 | 0.98522 | 0.98039 | 0.97561 | 0.97087 | 0.96154 | 0.95238 | 0.94340 | 0.93458 | 0.92593 | 0.91743 | 0.90909 | 0.90090 | 0.89286 |
| 2 | 0.99502 | 0.99007 | 0.98517 | 0.98030 | 0.97066 | 0.96117 | 0.95181 | 0.94260 | 0.92456 | 0.90703 | 0.89000 | 0.87344 | 0.85734 | 0.84168 | 0.82645 | 0.81162 | 0.79719 |
| 3 | 0.99254 | 0.98515 | 0.97783 | 0.97059 | 0.95632 | 0.94232 | 0.92860 | 0.91514 | 0.88900 | 0.86384 | 0.83962 | 0.81630 | 0.79383 | 0.77218 | 0.75131 | 0.73119 | 0.71178 |
| 4 | 0.99006 | 0.98025 | 0.97055 | 0.96098 | 0.94218 | 0.92385 | 0.90595 | 0.88849 | 0.85480 | 0.82270 | 0.79209 | 0.76290 | 0.73503 | 0.70843 | 0.68301 | 0.65873 | 0.63552 |
| 5 | 0.98759 | 0.97537 | 0.96333 | 0.95147 | 0.92826 | 0.90573 | 0.88385 | 0.86261 | 0.82193 | 0.78353 | 0.74726 | 0.71299 | 0.68058 | 0.64993 | 0.62092 | 0.59345 | 0.56743 |
| 6 | 0.98513 | 0.97052 | 0.95616 | 0.94205 | 0.91454 | 0.88797 | 0.86230 | 0.83748 | 0.79031 | 0.74622 | 0.70496 | 0.66634 | 0.63017 | 0.59627 | 0.56447 | 0.53464 | 0.50663 |
| 7 | 0.98267 | 0.96569 | 0.94904 | 0.93272 | 0.90103 | 0.87056 | 0.84127 | 0.81309 | 0.75992 | 0.71068 | 0.66506 | 0.62275 | 0.58349 | 0.54703 | 0.51316 | 0.48166 | 0.45235 |
| 8 | 0.98022 | 0.96089 | 0.94198 | 0.92348 | 0.88771 | 0.85349 | 0.82075 | 0.78941 | 0.73069 | 0.67684 | 0.62741 | 0.58201 | 0.54027 | 0.50187 | 0.46651 | 0.43393 | 0.40388 |
| 9 | 0.97778 | 0.95610 | 0.93496 | 0.91434 | 0.87459 | 0.83676 | 0.80073 | 0.76642 | 0.70259 | 0.64461 | 0.59190 | 0.54393 | 0.50025 | 0.46043 | 0.42410 | 0.39092 | 0.36061 |
| 10 | 0.97534 | 0.95135 | 0.92800 | 0.90529 | 0.86167 | 0.82035 | 0.78120 | 0.74409 | 0.67556 | 0.61391 | 0.55839 | 0.50835 | 0.46319 | 0.42241 | 0.38554 | 0.35218 | 0.32197 |
| 11 | 0.97291 | 0.94661 | 0.92109 | 0.89632 | 0.84893 | 0.80426 | 0.76214 | 0.72242 | 0.64958 | 0.58468 | 0.52679 | 0.47509 | 0.42888 | 0.38753 | 0.35049 | 0.31728 | 0.28748 |
| 12 | 0.97048 | 0.94191 | 0.91424 | 0.88745 | 0.83639 | 0.78849 | 0.74356 | 0.70138 | 0.62460 | 0.55684 | 0.49697 | 0.44401 | 0.39711 | 0.35553 | 0.31863 | 0.28584 | 0.25668 |
| 13 | 0.96806 | 0.93722 | 0.90743 | 0.87866 | 0.82403 | 0.77303 | 0.72542 | 0.68095 | 0.60057 | 0.53032 | 0.46884 | 0.41496 | 0.36770 | 0.32618 | 0.28966 | 0.25751 | 0.22917 |
| 14 | 0.96565 | 0.93256 | 0.90068 | 0.86996 | 0.81185 | 0.75788 | 0.70773 | 0.66112 | 0.57748 | 0.50507 | 0.44230 | 0.38782 | 0.34046 | 0.29925 | 0.26333 | 0.23199 | 0.20462 |
| 15 | 0.96324 | 0.92792 | 0.89397 | 0.86135 | 0.79985 | 0.74301 | 0.69047 | 0.64186 | 0.55526 | 0.48102 | 0.41727 | 0.36245 | 0.31524 | 0.27454 | 0.23939 | 0.20900 | 0.18270 |
| 16 | 0.96084 | 0.92330 | 0.88732 | 0.85282 | 0.78803 | 0.72845 | 0.67362 | 0.62317 | 0.53391 | 0.45811 | 0.39365 | 0.33873 | 0.29189 | 0.25187 | 0.21763 | 0.18829 | 0.16312 |
| 17 | 0.95844 | 0.91871 | 0.88071 | 0.84438 | 0.77639 | 0.71416 | 0.65720 | 0.60502 | 0.51337 | 0.43630 | 0.37136 | 0.31657 | 0.27027 | 0.23107 | 0.19784 | 0.16963 | 0.14564 |
| 18 | 0.95605 | 0.91414 | 0.87416 | 0.83602 | 0.76491 | 0.70016 | 0.64117 | 0.58739 | 0.49363 | 0.41552 | 0.35034 | 0.29586 | 0.25025 | 0.21199 | 0.17986 | 0.15282 | 0.13004 |
| 19 | 0.95367 | 0.90959 | 0.86765 | 0.82774 | 0.75361 | 0.68643 | 0.62553 | 0.57029 | 0.47464 | 0.39573 | 0.33051 | 0.27651 | 0.23171 | 0.19449 | 0.16351 | 0.13768 | 0.11611 |
| 20 | 0.95129 | 0.90506 | 0.86119 | 0.81954 | 0.74247 | 0.67297 | 0.61027 | 0.55368 | 0.45639 | 0.37689 | 0.31180 | 0.25842 | 0.21455 | 0.17843 | 0.14864 | 0.12403 | 0.10367 |
| 21 | 0.94892 | 0.90056 | 0.85478 | 0.81143 | 0.73150 | 0.65978 | 0.59539 | 0.53755 | 0.43883 | 0.35894 | 0.29416 | 0.24151 | 0.19866 | 0.16370 | 0.13513 | 0.11174 | 0.09256 |
| 22 | 0.94655 | 0.89608 | 0.84842 | 0.80340 | 0.72069 | 0.64684 | 0.58086 | 0.52189 | 0.42196 | 0.34185 | 0.27751 | 0.22571 | 0.18394 | 0.15018 | 0.12285 | 0.10067 | 0.08264 |
| 23 | 0.94419 | 0.89162 | 0.84210 | 0.79544 | 0.71004 | 0.63416 | 0.56670 | 0.50669 | 0.40573 | 0.32557 | 0.26180 | 0.21095 | 0.17032 | 0.13778 | 0.11168 | 0.09069 | 0.07379 |
| 24 | 0.94184 | 0.88719 | 0.83583 | 0.78757 | 0.69954 | 0.62172 | 0.55288 | 0.49193 | 0.39012 | 0.31007 | 0.24698 | 0.19715 | 0.15770 | 0.12640 | 0.10153 | 0.08170 | 0.06588 |
| 25 | 0.93949 | 0.88277 | 0.82961 | 0.77977 | 0.68921 | 0.60953 | 0.53939 | 0.47761 | 0.37512 | 0.29530 | 0.23300 | 0.18425 | 0.14602 | 0.11597 | 0.09230 | 0.07361 | 0.05882 |
| 30 | 0.92783 | 0.86103 | 0.79919 | 0.74192 | 0.63976 | 0.55207 | 0.47674 | 0.41199 | 0.30832 | 0.23138 | 0.17411 | 0.13137 | 0.09938 | 0.07537 | 0.05731 | 0.04368 | 0.03338 |
| 35 | 0.91632 | 0.83982 | 0.76988 | 0.70591 | 0.59387 | 0.50003 | 0.42137 | 0.35538 | 0.25342 | 0.18129 | 0.13011 | 0.09366 | 0.06763 | 0.04899 | 0.03558 | 0.02592 | 0.01894 |
| 40 | 0.90495 | 0.81914 | 0.74165 | 0.67165 | 0.55126 | 0.45289 | 0.37243 | 0.30656 | 0.20829 | 0.14205 | 0.09722 | 0.06678 | 0.04603 | 0.03184 | 0.02209 | 0.01538 | 0.01075 |
| 50 | 0.88263 | 0.77929 | 0.68825 | 0.60804 | 0.47500 | 0.37153 | 0.29094 | 0.22811 | 0.14071 | 0.08720 | 0.05429 | 0.03395 | 0.02132 | 0.01345 | 0.00852 | 0.00542 | 0.00346 |

## BOND PRICE

## PAR

COUPON RATE: 6\%
=
MARKET RATE: 6\%

| BOND PRICE |  |
| :---: | :---: |
|  |  |
| PV of Interest Cash Payments | $\$ 206,527$ |
| $\$ 42,000 \times 4.91732$ |  |
| Table: ordinary annuity $(\mathrm{n}=6, \mathrm{i}=6 \%)$ |  |
| PV of Principal |  |
| $\$ 700,000 \times 0.70496$ | $\$ 493,473$ |
| Table: PV of $\$ 1(\mathrm{n}=6, \mathrm{i}=6 \%)$ |  |
|  | $\$ 700,000$ |


| $\begin{aligned} & \mathrm{e} \\ & \mathrm{r} \end{aligned}$ | PRESENT VALUE OF ORDINARY ANNUITY (annuity in arrears -- end of period payments) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| - | RATE PER PERIOD |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| s | 0.25\% | 0.50\% | 0.75\% | 1.00\% | 50\% | 2.00\% | 2.50\% | 3.00\% | 4.00\% | 5.00\% | 6.00\% | 7.00\% | 8.00\% | 9.00\% | 10.00\% | 11.00 | 12.0 |
| 1 | 0.99751 | 0.99502 | 0.99256 | 0.99010 | 0.98522 | 0.98039 | 0.97561 | 0.97087 | 0.96154 | 0.95238 | 0.94340 | 0.93458 | 0.92593 | 0.91743 | 0.90909 | 0.90090 | 0.89286 |
| 2 | 1.99252 | 1.98510 | 1.97772 | 1.97040 | 1.95588 | 1.94156 | 1.92742 | 1.91347 | 1.88609 | 1.85941 | 1.83339 | 1.80802 | 1.78326 | 1.75911 | 1.73554 | 1.71252 | 1.69005 |
| 3 | 2.98506 | 2.97025 | 2.95556 | 2.94099 | 2.91220 | 2.88388 | 2.85602 | 2.82861 | 2.77509 | 2.72325 | 2.67301 | 2.62432 | 2.57710 | 2.53129 | 2.48685 | 2.44371 | 2.40183 |
| 4 | 3.97512 | 3.95050 | 3.92611 | 3.90197 | 3.85438 | 3.80773 | 3.76197 | 3.71710 | 3.62990 | 3.54595 | 3.46511 | 3.38721 | 3.31213 | 3.23972 | 3.16987 | 3.10245 | 3.03735 |
| 5 | 4.96272 | 4.92587 | 4.88944 | 4.85343 | 4.78264 | 4.71346 | 4.64583 | 4.57971 | 4.45182 | 4.32948 | 4.21236 | 4.10020 | 3.99271 | 3.88965 | 3.79079 | 3.69590 | 3.60478 |
| 6 | 5.94785 | 5.89638 | 5.84560 | 5.79548 | 5.69719 | 5.60143 | 5.50813 | 5.41719 | 5.24214 | 5.07569 | 4.91732 | 4.76654 | 4.62288 | 4.48592 | 4.35526 | 4.23054 | 4.11141 |
| 7 | 6.93052 | 6.86207 | 6.79464 | 6.72819 | 6.59821 | 6.47199 | 6.34939 | 6.23028 | 6.00205 | 5.78637 | 5.58238 | 5.38929 | 5.20637 | 5.03295 | 4.86842 | 4.71220 | 4.56376 |
| 8 | 7.91074 | 7.82296 | 7.73661 | 7.65168 | 7.48593 | 7.32548 | 7.17014 | 7.01969 | 6.73274 | 6.46321 | 6.20979 | 5.97130 | 5.74664 | 5.53482 | 5.33493 | 5.14612 | 4.96764 |
| 9 | 8.88852 | 8.77906 | 8.67158 | 8.56602 | 8.36052 | 8.16224 | 7.97087 | 7.78611 | 7.43533 | 7.10782 | 6.80169 | 6.51523 | 6.24689 | 5.99525 | 5.75902 | 5.53705 | 5.32825 |
| 10 | 9.86386 | 9.73041 | 9.59958 | 9.47130 | 9.22218 | 8.98259 | 8.75206 | 8.53020 | 8.11090 | 7.72173 | 7.36009 | 7.02358 | 6.71008 | 6.41766 | 6.14457 | 5.88923 | 5.65022 |
| 11 | 10.83677 | 10.67703 | 10.52067 | 10.36763 | 10.07112 | 9.78685 | 9.51421 | 9.25262 | 8.76048 | 8.30641 | 7.88687 | 7.49867 | 7.13896 | 6.80519 | 6.49506 | 6.20652 | 5.93770 |
| 12 | 11.80725 | 11.61893 | 11.43491 | 11.25508 | 10.90751 | 10.57534 | 10.25776 | 9.95400 | 9.38507 | 8.86325 | 8.38384 | 7.94269 | 7.53608 | 7.16073 | 6.81369 | 6.49236 | 6.19437 |
| 13 | 12.77532 | 12.55615 | 12.34235 | 12.13374 | 11.73153 | 11.34837 | 10.98318 | 10.63496 | 9.98565 | 9.39357 | 8.85268 | 8.35765 | 7.90378 | 7.48690 | 7.10336 | 6.74987 | 6.42355 |
| 14 | 13.74096 | 13.48871 | 13.24302 | 13.00370 | 12.54338 | 12.10625 | 11.69091 | 11.29607 | 10.56312 | 9.89864 | 9.29498 | 8.74547 | 8.24424 | 7.78615 | 7.36669 | 6.98187 | 6.62817 |
| 15 | 14.70420 | 14.41662 | 14.13699 | 13.86505 | 13.34323 | 12.84926 | 12.38138 | 11.93794 | 11.11839 | 10.37966 | 9.71225 | 9.10791 | 8.55948 | 8.06069 | 7.60608 | 7.19087 | 6.81086 |
| 16 | 15.66504 | 15.33993 | 15.02431 | 14.71787 | 14.13126 | 13.57771 | 13.05500 | 12.56110 | 11.65230 | 10.83777 | 10.10590 | 9.44665 | 8.85137 | 8.31256 | 7.82371 | 7.37916 | 6.97399 |
| 17 | 16.62348 | 16.25863 | 15.90502 | 15.56225 | 14.90765 | 14.29187 | 13.71220 | 13.16612 | 12.16567 | 11.27407 | 10.47726 | 9.76322 | 9.12164 | 8.54363 | 8.02155 | 7.54879 | 7.11963 |
|  | 17.57953 | 17.17277 | 16.77918 | 16.39827 | 15.67256 | 14.99203 | 14.35336 | 13.75351 | 12.65930 | 11.68959 | 10.82760 | 10.05909 | 9.37189 | 8.75563 | 8.20141 | 7.70162 | 7.24967 |
| 19 | 18.53320 | 18.08236 | 17.64683 | 17.22601 | 16.42617 | 15.67846 | 14.97889 | 14.32380 | 13.13394 | 12.08532 | 11.15812 | 10.33560 | 9.60360 | 8.95011 | 8.36492 | 7.83929 | 7.36578 |
| 20 | 19.48449 | 18.98742 | 18.50802 | 18.04555 | 17.16864 | 16.35143 | 15.58916 | 14.87747 | 13.59033 | 12.46221 | 11.46992 | 10.59401 | 9.81815 | 9.12855 | 8.51356 | 7.96333 | 7.46944 |
| 21 | 20.43340 | 19.88798 | 19.36280 | 18.85698 | 17.90014 | 17.01121 | 16.18455 | 15.41502 | 14.02916 | 12.82115 | 11.76408 | 10.83553 | 10.01680 | 9.29224 | 8.64869 | 8.07507 | 7.56200 |
| 22 | 21.37995 | 20.78406 | 20.21121 | 19.66038 | 18.62082 | 17.65805 | 16.76541 | 15.93692 | 14.45112 | 13.16300 | 12.04158 | 11.06124 | 10.20074 | 9.44243 | 8.77154 | 8.17574 | 7.64465 |
| 23 | 22.32414 | 21.67568 | 21.05331 | 20.45582 | 19.33086 | 18.29220 | 17.33211 | 16.44361 | 14.85684 | 13.48857 | 12.30338 | 11.27219 | 10.37106 | 9.58021 | 8.88322 | 8.26643 | 7.71843 |
| 24 | 23.26598 | 22.56287 | 21.88915 | 21.24339 | 20.03041 | 18.91393 | 17.88499 | 16.93554 | 15.24696 | 13.79864 | 12.55036 | 11.46933 | 10.52876 | 9.70661 | 8.98474 | 8.34814 | 7.78432 |
| 25 | 24.20547 | 23.44564 | 22.71876 | 22.02316 | 20.71961 | 19.52346 | 18.42438 | 17.41315 | 15.62208 | 14.09394 | 12.78336 | 11.65358 | 10.67478 | 9.82258 | 9.07704 | 8.42174 | 7.84314 |
| 30 | 28.86787 | 27.79405 | 26.77508 | 25.80771 | 24.01584 | 22.39646 | 20.93029 | 19.60044 | 17.29203 | 15.37245 | 13.76483 | 12.40904 | 11.25778 | 10.27365 | 9.42691 | 8.69379 | 8.05518 |
| 35 | 33.47243 | 32.03537 | 30.68266 | 29.40858 | 27.07559 | 24.99862 | 23.14516 | 21.48722 | 18.66461 | 16.37419 | 14.49825 | 12.94767 | 11.65457 | 10.56682 | 9.64416 | 8.85524 | 8.17550 |
| 40 | 38.01986 | 36.17223 | 34.44694 | 32.83469 | 29.91585 | 27.35548 | 25.10278 | 23.14477 | 19.79277 | 17.15909 | 15.04630 | 13.33171 | 11.92461 | 10.75736 | 9.77905 | 8.95105 | 8.24378 |
| 50 | 46.94617 | 44.14279 | 41.56645 | 39.19612 | 34.99969 | 31.42361 | 28.36231 | 25.72976 | 21.48218 | 18.25593 | 15.76186 | 13.80075 | 12.23348 | 10.96168 | 9.91481 | 9.04165 | 8.30450 |


| e <br> e <br> r | PRESENT VALUE OF \$1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | RATE PER PERIOD |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $s$ | 0.25\% | 0.50\% | 0.75\% | 1.00\% | 1.50\% | 2.00\% | 2.50\% | 3.00\% | 4.00\% | 5.00\% | 6.00\% | 7.00\% | 8.00\% | 9.00\% | 10.00\% | 11.00\% | 12.00\% |
| 1 | 0.99751 | 0.99502 | 0.99256 | 0.99010 | 0.98522 | 0.98039 | 0.97561 | 0.97087 | 0.96154 | 0.95238 | 0.94340 | 0.93458 | 0.92593 | 0.91743 | 0.90909 | 0.90090 | 0.89286 |
| 2 | 0.99502 | 0.99007 | 0.98517 | 0.98030 | 0.97066 | 0.96117 | 0.95181 | 0.94260 | 0.92456 | 0.90703 | 0.89000 | 0.8734 | 0.85734 | 0.84168 | 0.82645 | 0.81162 | 0.79719 |
| , | 0.99254 | 0.98515 | 0.97783 | 0.97059 | 0.95632 | 0.94232 | 0.92880 | 0.91514 | 0.88900 | 0.86334 | 0.83962 | 0.81630 | 0.79383 | 0.77218 | 0.75131 | 0.73119 | 0.71178 |
| 4 | 0.99006 | 0.98025 | 0.97055 | 0.96098 | 0.94218 | 0.92385 | 0.90595 | 0.88849 | 0.85480 | 0.82270 | 0.79209 | 0.76290 | 0.73503 | 0.70843 | 0.68301 | 0.65873 | 0.63552 |
| 5 | 0.98759 | 0.97537 | 0.96333 | 0.95147 | 0.92826 | 0.90573 | 0.88385 | 0.86261 | 0.82193 | 0.78353 | 0.74726 | 0.71299 | 0.68058 | 0.64993 | 0.62992 | 0.59345 | 0.56743 |
| 6 | 0.98513 | 0.97052 | 0.95616 | 0.94205 | 0.91454 | 0.88797 | 0.86230 | 0.83748 | 0.79031 | 0.74622 | 0.70496 | 0.66334 | 0.63017 | 0.59627 | 0.56447 | 0.53464 | 0.50663 |
| 7 | 0.98267 | 0.96569 | 0.94904 | 0.93272 | 0.90103 | 0.87056 | 0.84127 | 0.81309 | 0.75992 | 0.71068 | 0.66506 | 0.62275 | 0.58349 | 0.54703 | 0.51316 | 0.48166 | 0.45235 |
| 8 | 0.98022 | 0.96089 | 0.94198 | 0.92348 | 0.88771 | 0.85349 | 0.82075 | 0.78941 | 0.73069 | 0.67884 | 0.62741 | 0.58201 | 0.54027 | 0.50187 | 0.46651 | 0.43393 | 0.40388 |
| 9 | 0.97778 | 0.95610 | 0.93496 | 0.91434 | 0.87459 | 0.83676 | 0.80073 | 0.76642 | 0.70259 | 0.64461 | 0.59190 | 0.54393 | 0.50025 | 0.46043 | 0.42410 | 0.39092 | 0.36061 |
| 10 | 0.9753 | 0.95135 | 0.92800 | 0.90529 | 0.86167 | 0.82035 | 0.78120 | 0.74409 | 0.67556 | 0.61391 | 0.55839 | 0.50835 | 0.46319 | 0.42241 | 0.38554 | 0.35218 | 0.32197 |
| 11 | 0.97291 | 0.94661 | 0.92109 | 0.89632 | 0.84893 | 0.80426 | 0.76214 | 0.7242 | 0.64958 | 0.58468 | 0.52679 | 0.47509 | 0.42888 | 0.38753 | 0.35049 | 0.31728 | 0.28748 |
| 12 | 0.97048 | 0.94191 | 0.91424 | 0.88745 | 0.83639 | 0.78849 | 0.74356 | 0.70138 | 0.62460 | 0.55684 | 0.49697 | 0.44401 | 0.39711 | 0.35553 | 0.31863 | 0.28584 | 0.25688 |
| 13 | 0.96806 | 0.93722 | 0.9074 | 0.87866 | 0.82403 | 0.77303 | 0.72542 | 0.68095 | 0.60057 | 0.53032 | 0.46884 | 0.41496 | 0.36770 | 0.32618 | 0.28966 | 0.25751 | 0.22917 |
| 14 | 0.96565 | 0.93256 | 0.90068 | 0.86996 | 0.81185 | 0.75788 | 0.70773 | 0.66112 | 0.57748 | 0.50507 | 0.44230 | 0.38782 | 0.34046 | 0.29925 | 0.26333 | 0.23199 | 0.20462 |
| 15 | 0.96324 | 0.92792 | 0.89397 | 0.86135 | 0.79985 | 0.74301 | 0.69047 | 0.64186 | 0.55526 | 0.48102 | 0.41727 | 0.36245 | 0.31524 | 0.27454 | 0.23939 | 0.20900 | 0.18270 |
| 16 | 0.96084 | 0.92330 | 0.88732 | 0.85282 | 0.78803 | 0.72845 | 0.67362 | 0.62317 | 0.53391 | 0.45811 | 0.39365 | 0.33873 | 0.29189 | 0.25187 | 0.21763 | 0.18829 | 0.16312 |
| 17 | 0.9584 | 0.91871 | 0.88071 | 0.84438 | 0.77639 | 0.71416 | 0.65720 | 0.60502 | 0.51337 | 0.43630 | 0.37136 | 0.31657 | 0.27027 | 0.23107 | 0.19784 | 0.16963 | 0.14564 |
| 18 | 0.95605 | 0.91414 | 0.87416 | 0.83602 | 0.76491 | 0.70016 | 0.64117 | 0.58739 | 0.49363 | 0.41552 | 0.35034 | 0.29586 | 0.25025 | 0.21199 | 0.17986 | 0.15282 | 0.13004 |
| 19 | 0.95367 | 0.90959 | 0.86765 | 0.82774 | 0.75361 | 0.68643 | 0.62553 | 0.57029 | 0.47464 | 0.39573 | 0.33051 | 0.27651 | 0.23171 | 0.19449 | 0.16351 | 0.13768 | 0.11611 |
| 20 | 0.95129 | 0.90506 | 0.86119 | 0.81954 | 0.74247 | 0.67297 | 0.61027 | 0.55368 | 0.45639 | 0.37689 | 0.31180 | 0.25842 | 0.21455 | 0.17843 | 0.14864 | 0.12403 | 0.10367 |
| 21 | 0.94892 | 0.90056 | 0.85478 | 0.81143 | 0.73150 | 0.65978 | 0.59539 | 0.53755 | 0.43883 | 0.35894 | 0.29416 | 0.24151 | 0.19866 | 0.16370 | 0.13513 | 0.11174 | 0.09256 |
| 22 | 0.94655 | 0.89608 | 0.84842 | 0.80340 | 0.72069 | 0.64684 | 0.58086 | 0.52189 | 0.42196 | 0.34185 | 0.27751 | 0.22571 | 0.18394 | 0.15018 | 0.12285 | 0.10067 | 0.08264 |
| 23 | 0.94419 | 0.89162 | 0.84210 | 0.79544 | 0.71004 | 0.63416 | 0.56670 | 0.50669 | 0.40573 | 0.32557 | 0.26180 | 0.21095 | 0.17032 | 0.13778 | 0.11168 | 0.09069 | 0.07379 |
| 24 | 0.94184 | 0.88719 | 0.83583 | 0.78757 | 0.69954 | 0.62172 | 0.55288 | 0.49193 | 0.39012 | 0.31007 | 0.24698 | 0.19715 | 0.15770 | 0.12640 | 0.10153 | 0.08170 | 0.06588 |
| 25 | 0.93949 | 0.88277 | 0.82961 | 0.77977 | 0.68921 | 0.60953 | 0.53939 | 0.47761 | 0.37512 | 0.29930 | 0.23300 | 0.18425 | 0.14602 | 0.11597 | 0.09230 | 0.07361 | 0.05882 |
| 30 | 0.92783 | 0.86103 | 0.79919 | 0.74192 | 0.63976 | 0.55207 | 0.47674 | 0.4199 | 0.30832 | 0.23138 | 0.17411 | 0.13137 | 0.09938 | 0.07537 | 0.05731 | 0.04368 | 0.03338 |
| 35 | 0.91632 | 0.83982 | 0.76988 | 0.70591 | 0.59387 | 0.50003 | 0.42137 | 0.35538 | 0.25342 | 0.18129 | 0.13011 | 0.09366 | 0.06763 | 0.04899 | 0.03558 | 0.02592 | 0.01894 |
| 40 | 0.90495 | 0.81914 | 0.74165 | 0.67165 | 0.55126 | 0.45289 | 0.37243 | 0.30656 | 0.20829 | 0.14205 | 0.09722 | 0.06678 | 0.04603 | 0.03184 | 0.02209 | 0.01538 | 0.01075 |
| 50 | 0.8263 | 0.77929 | 0.68825 | 0.60804 | 0.47500 | 0.37153 | 0.29094 | 0.22811 | 0.14071 | 0.08720 | 0.05429 | 0.03395 | 0.02132 | 0.01345 | 0.00852 | 0.00542 | 0.00346 |


|  |  | A | B | C | D | E |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Date | Cash | Effective | Decrease in | Outstanding |
|  |  |  | Interest / Payment | Interest | Balance | Balance |
| COUPON RATE: $6 \%$ |  |  | 6\% | 6\% |  | Carrying Value |
| $=$ |  |  |  |  |  |  |
|  |  |  | Principal x Coupon Rate | (Ex C) | (B-C) | (E-D) |
| MARKET RATE: 6\% |  | 1/1/Y1 |  |  |  | \$700,000 |
|  |  | 6/30/Y1 | 42,000 | 42,000 (700,000 X .06) | 0 | 700,000 |
|  |  | 12/31/Y1 | 42,000 | 42,000 (700,000 X .06) | 0 | 700,000 |
|  |  | 6/30/Y2 | 42,000 | 42,000 (700,000 X .06) | 0 | 700,000 |
| BOND PRICE |  | 12/31/Y2 | 42,000 | 42,000 (700,000 X .06) | 0 | 700,000 |
| PV of Interest Cash Payments | \$206,527 | 6/30/Y3 | 42,000 | 42,000 (700,000 X .06) | 0 | 700,000 |
| \$42,000 4.91732 |  | 12/31/Y3 | 42,000 | 42,000 (700,000 X .06) | 0 | 700,000 |
| Table: ordinary annity ( $n=6, \mathrm{i}=6 \%$ ) PV of Principal |  |  | 252,000 | 216,467 | 0 |  |
| \$700,000 x 0.70496 | \$493,473 |  |  |  |  |  |
| Table: PV of $81(n=6, \mathrm{i}=6 \%)$ | \$700,000 |  | COUPON RATE |  |  |  |
| \$ ${ }^{\text {a }}$ ( Semi annual: $42,000 / 700,000=6 . \%$ |  |  |  |  |  |  |
|  |  |  |  | Annual: $84,000 / 700,000=12 \%$ |  |  |  |
|  |  |  | FFECTIVE/ MARKET INTEREST RATE |  |  |  |
|  |  |  | Semi annual: $42,000 / 700,000=6 . \%$ |  |  |  |
|  |  |  | Annual: $84,000 / 700,000=12 \%$ |  |  |  |

PAR
COUPON RATE: $6 \%$

## $=$

MARKET RATE: 6\%

| BOND PRICE |  |
| :---: | :---: |
|  |  |
| PV of Interest Cash Payments | $\$ 206,527$ |
| $\$ 42,000 \times 4.91732$ |  |
| Table: ordinary annuity (n=6, $\mathrm{i}=6 \%)$ |  |
| PV of Principal |  |
| $\$ 700,000 \times 0.70496$ | $\$ 493,473$ |
| Table: PV of $\$ 1(\mathrm{n}=6, \mathrm{i}=6 \%)$ |  |
|  | $\$ 700,000$ |

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| JOURNAL ENTRIES |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1/1/Y1 |  |  | 12/31Y3 |  |  |
| Dr. Cash | 700,000 |  | Dr. Bonds Payable | 700,000 |  |
| Cr. Bonds Payable |  | 700,000 | Cr. Cash |  | 700,000 |
|  |  |  |  |  |  |
| To record bond issue |  |  | To record bond principal payment |  |  |
|  |  |  |  |  |  |
| 6/30/Y1 |  |  | 6/30/Y3 |  |  |
| Dr. Interest Expense | 42,000 |  | Dr. Interest Expense | 42,000 |  |
| Cr. Cash |  | 42,000 | Cr. Cash |  | 42,000 |
| To record interest payment |  |  | To record interest payment |  |  |
|  |  |  |  |  |  |
| 12/31/Y1 |  |  | 12/31/Y3 |  |  |
| Dr. Interest Expense | 42,000 |  | Dr. Interest Expense | 42,000 |  |
| Cr. Cash |  | 42,000 | Cr. Cash |  | 42,000 |
| To record interest payment |  |  | To record interest payment |  |  |
|  |  |  |  |  |  |
| 6/30/Y2 |  |  |  |  |  |
| Dr. Interest Expense | 42,000 |  |  |  |  |
| Cr. Cash |  | 42,000 |  |  |  |
| To record interest payment |  |  |  |  |  |
|  |  |  |  |  |  |
| 12/31/Y2 |  |  |  |  |  |
| Dr. Interest Expense | 42,000 |  |  |  |  |
| Cr. Cash |  | 42,000 |  |  |  |
| To record interest payment |  |  |  |  | 17 |


| BOND PRICE |  |
| :---: | :---: |
|  |  |
| PV of Interest Cash Payments | $\$ 206,527$ |
| $\$ 42,000 \times 4.91732$ |  |
| Table: ordinary annuity $(\mathrm{n}=6, \mathrm{i}=6 \%)$ |  |
| PV of Principal |  |
| $\$ 700,000 \times 0.70496$ | $\$ 493,473$ |
| Table: PV of $\$ 1(\mathrm{n}=6, \mathrm{i}=6 \%)$ |  |
|  | $\$ \mathbf{7 0 0 , 0 0 0}$ |


| A | B | C | D | E | JOURNAL ENTRIES |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Date | Cash | Effective | Decrease in | Outstanding | 1/1/Y1 |  |  | 12/31Y3 |  |  |
|  |  |  |  | Balance | Dr. Cash | 700,000 |  | Dr. Bonds Payable | 700,000 |  |
|  | Interest / Payment | Interest | Balance | Balance | Cr. Bonds Payable |  | 700,000 | Cr. Cash |  | 700,000 |
|  | 6\% | 6\% |  | Carrying Value |  |  |  |  |  |  |
|  |  |  |  |  | To rec | sue |  | To record bond | pal paym |  |
|  | Principal x Coupon Rate | (ExC) | (B-C) | (E-D) |  |  |  |  |  |  |
| 1/1/Y1 |  |  |  | \$700,000 | -6/30/Y1 | 42,000 |  | 6/30/Y3 |  |  |
| 6/30/Y1 | 42,000 | 42,000 (700,000 X .06) | 0 | 700,000 | Cr. Cash |  | 42,000 | Cr. Cash |  | 42,000 |
| 12/31/Y1 | 42,000 | 42,000 (700,000 X .06) | 0 | 700,000 | To record | ayment |  | To record $i$ | payment |  |
| 6/30/Y2 | 42,000 | 42,000 (700,000 X .06) | 0 | 700,000 |  |  |  |  |  |  |
| 12/31/Y2 | 42,000 | 42,000 (700,000 X .06) | 0 | 700,000 | 12/31/Y1 | 42,000 |  | 12/31/Y3 |  |  |
| 6/30/Y3 | 42,000 | 42,000 (700,000 X .06) | 0 | 700,000 | Cr. Cash |  | 42,000 | Dr. Interest Expense Cr. Cash |  | 42,000 |
| 12/31/Y3 | 42,000 | 42,000 (700,000 X .06) | 0 | 700,000 | To record | ayment |  | To record $i$ | payment |  |
|  | 252,000 | 216,467 | 0 |  |  |  |  |  |  |  |
|  |  |  |  |  | 6/30/Y2 |  |  |  |  |  |
|  |  |  |  |  | Dr. Interest Expense | 42,000 |  |  |  |  |
|  | COUPON RATE |  |  |  | Cr. Cash |  | 42,000 |  |  |  |
|  | Semi annual: $42,000 / 700,000=6 . \%$ |  |  |  | To record | ayment |  |  |  |  |
|  | Annual: $84,000 / 700,000=12 \%$ |  |  |  |  |  |  |  |  |  |
|  | FFECTIVE/ MARKET INTEREST RATE |  |  |  | 12/31/Y2 |  |  |  |  |  |
|  |  |  |  |  | Dr. Interest Expense | 42,000 |  |  |  |  |
|  | Semi annual: $42,000 / 700,000=6 . \%$ |  |  |  | Cr. Cash |  | 42,000 |  |  |  |
|  | Annual: $84,000 / 700,000=12 \%$ |  |  |  | To record | ayment |  |  | 18 |  |

## PREMIUM

COUPON RATE: 6\%
$>$
MARKET RATE: 5\%

|  |  |
| :---: | :---: |
| PV of Interest Cash Payments | $\$ 213,179$ |
| $\$ 42,000 \mathrm{x} \times 5.07569$ |  |
| Table: ordinary annuity (n=6, $\mathrm{i}=5 \%)$ |  |
| PV of Principal |  |
| $\$ 700,000 \times 0.74622$ | $\$ 522,354$ |
| Table: $\operatorname{PV}$ of $\$ 1(\mathrm{n}=6, \mathrm{i}=5 \%)$ |  |
|  | $\$ \mathbf{7 3 5 , 5 3 3}$ |


|  | PRESENT VALUE OF ORDINARY ANNUITY (annuity in arrears -- end of period payments) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| - | RATE PER PERIOD |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| s | 0.25\% | 0.5 | 0.7 | 1.00 | 50\% | 2.00\% | 2.50\% | 3.00\% | 4.00\% | 5.00\% | 6.00\% | 00\% | 3.00\% | 00\% | 0.00\% |  |  |
| 1 | 0.99751 | 0.99502 | 0.99256 | 0.99010 | 0.98522 |  | 0.97561 | 0.97087 | 0.96154 | 0.95238 | 0.94340 | 0.93458 | 0.92593 | 0.91743 | 0.90909 | 0.90090 | 0.892 |
| 2 | 1.99252 | 1.98510 | 1.97772 | 1.97040 | 1.95588 | 1.94156 | 1.92742 | 1.91347 | 1.88609 | 1.85941 | 1.83339 | 1.80802 | 1.78326 | 1.75911 | 1.73554 | 1.71252 | 1.69005 |
| 3 | 2.98506 | 2.97025 | 2.95556 | 2.94099 | 2.91220 | 2.88388 | 2.85602 | 2.82861 | 2.77509 | 2.72325 | 2.67301 | 2.62432 | 2.57710 | 2.53129 | 2.48685 | 2.44371 | 2.40183 |
| 4 | 3.97512 | 3.95050 | 3.92611 | 3.90197 | 3.85438 | 3.80773 | 3.76197 | 3.71710 | 3.62990 | 3.54595 | 3.46511 | 3.38721 | 3.31213 | 3.23972 | 3.16987 | 3.10245 | 3.03735 |
| 5 | 4.96272 | 4.92587 | 4.88944 | 4.85343 | 4.78264 | 4.71346 | 4.64583 | 4.57971 | 4.45182 | 4.32948 | 4.21236 | 4.10020 | 3.99271 | 3.88965 | 3.79079 | 3.69590 | ${ }^{3.60478}$ |
| 6 | 5.94785 | 5.89638 | 5.84560 | 5.79548 | 5.69719 | 5.60143 | 5.50813 | 5.41719 | 5.24214 | 5.07569 | 4.91732 | 4.76654 | 4.62288 | 4.48592 | 4.35526 | 4.23054 | 4.11141 |
| 7 | 6.93052 | 6.86207 | 6.79464 | 6.72819 | 6.59821 | 6.47199 | 6.34939 | 6.23028 | 6.00205 | 5.78637 | 5.58238 | 5.38929 | 5.20637 | 5.03295 | 4.86842 | 4.71220 | 4.56376 |
| 8 | 7.91074 | 7.82296 | 7.73661 | 7.65168 | 7.48593 | 7.32548 | 7.17014 | 7.01969 | 6.73274 | 6.46321 | 6.20979 | 5.97130 | 5.74664 | 5.53482 | 5.33493 | 5.14612 | 4.96764 |
| 9 | 8.88852 | 8.77906 | 8.67158 | 8.56602 | 8.36052 | 8.16224 | 7.97087 | 7.78611 | 7.43533 | 7.10782 | 6.80169 | 6.51523 | 6.24689 | 5.99525 | 5.75902 | 5.53705 | 5.32825 |
|  | 9.86386 | 9.73041 | 9.59958 | 9.47130 | 9.22218 | 8.98259 | 8.75206 | 8.53020 | 8.11090 | 7.72173 | 7.36009 | 7.02358 | 6.71008 | 6.41766 | 6.14457 | 5.88923 | 5.65022 |
| 11 | 10.83677 | 10.67703 | 10.52067 | 10.36763 | 10.07112 | 9.78685 | 9.51421 | 9.25262 | 8.76048 | 8.30641 | 7.88687 | 7.49867 | 7.13896 | 6.80519 | 6.49506 | 6.20652 | 5.93770 |
| 12 | 11.80725 | 11.61893 | 11.43491 | 11.25508 | 10.90751 | 10.57534 | 10.25776 | 9.95400 | 9.38507 | 8.86325 | 8.38384 | 7.94269 | 7.53608 | 7.16073 | 6.81369 | 6.49236 | 6.19437 |
| 13 | 12.77532 | 12.55615 | 12.34235 | 12.13374 | 11.73153 | 11.34837 | 10.98318 | 10.63496 | 9.98565 | 9.39357 | 8.85268 | 8.35765 | 7.90378 | 7.48690 | 7.10336 | 6.74987 | 6.42355 |
| 14 | 13.74096 | 13.48871 | 13.24302 | 13.00370 | 12.54338 | 12.10625 | 11.69091 | 11.29607 | 10.56312 | 9.89864 | 9.29498 | 8.74547 | 8.24424 | 7.78615 | 7.36669 | 6.98187 | 6.62817 |
|  | 14.70420 | 14.41662 | 14.13699 | 13.86505 | 13.34323 | 12.84926 | 12.38138 | 11.93794 | 11.11839 | 10.37966 | 9.71225 | 9.10791 | 8.55948 | 8.06069 | 7.60608 | 7.19087 | 6.81086 |
| 16 | 15.66504 | 15.33993 | 15.02431 | 14.71787 | 14.13126 | 13.57771 | 13.05500 | 12.56110 | 11.65230 | 10.83777 | 10.10590 | 9.44665 | 8.85137 | 8.31256 | 7.82371 | 7.37916 | 6.97399 |
|  | 16.62348 | 16.25863 | 15.90502 | 15.56225 | 14.90765 | 14.29187 | 13.71220 | 13.16612 | 12.16567 | 11.27407 | 10.47726 | 9.76322 | 9.12164 | 8.54363 | 8.02155 | 7.54879 | 7.11963 |
| 18 | 17.57953 | 17.17277 | 16.77918 | 16.39827 | 15.67256 | 14.99203 | 14.35336 | 13.75351 | 12.65930 | 11.68959 | 10.82760 | 10.05909 | 9.37189 | 8.75563 | 8.20141 | 7.70162 | 7.24967 |
| 19 | 18.53320 | 18.08236 | 17.64883 | 17.22601 | 16.42617 | 15.67846 | 14.97889 | 14.32380 | 13.13394 | 12.08532 | 11.15812 | 10.33560 | 9.60360 | 8.95011 | 8.36492 | 7.83929 | 7.36578 |
| 20 | 19.48449 | 18.98742 | 18.50802 | 18.04555 | 17.16864 | 16.35143 | 15.58916 | 14.87747 | 13.59033 | 12.46221 | 11.46992 | 10.59401 | 9.81815 | 9.12855 | 8.51356 | 7.96333 | 7.46944 |
| 21 | 20.43340 | 19.88798 | 19.36280 | 18.85698 | 17.90014 | 17.01121 | 16.18455 | 15.41502 | 14.02916 | 12.82115 | 11.76408 | 10.83553 | 10.01680 | 9.29224 | 8.64869 | 8.07507 | 7.56200 |
| 22 | 21.37995 | 20.78406 | 20.21121 | 19.66038 | 18.62082 | 17.65805 | 16.76541 | 15.93692 | 14.45112 | 13.16300 | 12.04158 | 11.06124 | 10.20074 | 9.44243 | 8.77154 | 8.17574 | 7.64465 |
| 23 | 22.32414 | 21.67568 | 21.05331 | 20.45582 | 19.33086 | 18.29220 | 17.33211 | 16.44361 | 14.85684 | 13.48857 | 12.30338 | 11.27219 | 10.37106 | 9.58021 | 8.88322 | 8.26643 | 7.71843 |
| 24 | 23.26598 | 22.56287 | 21.88915 | 21.24339 | 20.03041 | 18.91393 | 17.88499 | 16.93554 | 15.24696 | 13.79864 | 12.55036 | 11.46933 | 10.52876 | 9.70661 | 8.98474 | 8.34814 | 7.78432 |
| 25 | 24.20547 | 23.44564 | 22.71876 | 22.02316 | 20.71961 | 19.52346 | 18.42438 | 17.41315 | 15.62208 | 14.09394 | 12.78336 | 11.65358 | 10.67478 | 9.82258 | 9.07704 | 8.42174 | 7.84314 |
| 30 | 28.86787 | 27.79405 | 26.77508 | 25.80771 | 24.01584 | 22.39646 | 20.93029 | 19.60044 | 17.29203 | 15.37245 | 13.76483 | 12.40904 | 11.25778 | 10.27365 | 9.42691 | 8.69379 | 8.05518 |
| 35 | 33.47243 | 32.03537 | 30.68266 | 29.40858 | 27.07559 | 24.99862 | 23.14516 | 21.48722 | 18.66461 | 16.37419 | 14.49825 | 12.94767 | 11.65457 | 10.56682 | 9.64416 | 8.85524 | 8.17550 |
| 40 | 38.01986 | 36.17223 | 34.44694 | 32.83469 | 29.91585 | 27.35548 | 25.10278 | 23.14477 | 19.79277 | 17.15909 | 15.04630 | 13.33171 | 11.92461 | 10.75736 | 9.77905 | 8.95105 | 8.24378 |
| 50 | 46.94617 | 44.14279 | 41.56645 | 39.19612 | 34.99969 | 31.42361 | 28.36231 | 25.72976 | 21.48218 | 18.25593 | 15.76186 | 13.80075 | 12.23348 | 10.96168 | 9.91481 | 9.04165 | 8.30450 |


| e | PRESENT VALUE OF \$1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | RATE PER PERIOD |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| s | 0.25\% | 0.50\% | 0.75\% | 1.00\% | 1.50\% | 2.00\% | 2.50\% | 3.00\% | 4.00\% | 5.00\% | 6.00\% | 7.00\% | 8.00\% | 9.00\% | 10.00 | 11.00 | 12.0 |
| 1 | 0.99751 | 0.99502 | 0.99256 | 0.99010 | 0.98522 | 0.98039 | 0.97561 | 0.97087 | 0.96154 | 0.95238 | 0.94340 | 0.93458 | 0.92593 | 0.91743 | 0.9099 | 0.90090 | 0.89286 |
| 2 | 0.99502 | 0.99007 | 0.98517 | 0.98030 | 0.97066 | 0.96117 | 0.95181 | 0.94260 | 0.92456 | 0.90703 | 0.89000 | 0.8734 | 0.85734 | 0.84168 | 0.82645 | 0.8162 | 0.79719 |
| 3 | 0.99254 | 0.98515 | 0.97783 | 0.97059 | 0.95632 | 0.94232 | 0.92880 | 0.91514 | 0.88900 | 0.86384 | 0.83962 | 0.81630 | 0.79383 | 0.77218 | 0.75131 | 0.73119 | 0.71178 |
| 4 | 0.99006 | 0.98025 | 0.97055 | 0.96098 | 0.94218 | 0.92385 | 0.90595 | 0.88849 | 0.85480 | 0.82270 | 0.79209 | 0.76290 | 0.73503 | 0.70843 | 0.68301 | 0.65873 | 0.63552 |
| 5 | 0.98759 | 0.97537 | 0.96333 | 0.95147 | 0.92826 | 0.90573 | 0.88385 | 0.86261 | 0.82193 | 0.78353 | 0.74726 | 0.71299 | 0.68058 | 0.64993 | 0.62092 | 0.59345 | 0.56743 |
| 6 | 0.98513 | 0.97052 | 0.95616 | 0.94205 | 0.91454 | 0.88797 | 0.86230 | 0.83748 | 0.79031 | 0.74622 | 0.70496 | 0.66634 | 0.63017 | 0.59627 | 0.56447 | 0.53464 | 0.50663 |
| 7 | 0.98267 | 0.96569 | 0.94904 | 0.93272 | 0.90103 | 0.8756 | 0.84127 | 0.81309 | 0.75992 | 0.71068 | 0.66506 | 0.62275 | 0.58349 | 0.54703 | 0.51316 | 0.48166 | 0.45235 |
| 8 | 0.98022 | 0.96089 | 0.94198 | 0.92348 | 0.88771 | 0.85349 | 0.82075 | 0.78941 | 0.73069 | 0.67684 | 0.62741 | 0.58201 | 0.54027 | 0.50187 | 0.46651 | 0.43393 | 0.40388 |
| - | 0.97778 | 0.95610 | 0.93496 | 0.91434 | 0.87459 | 0.83676 | 0.80073 | 0.76642 | 0.70259 | 0.64461 | 0.59190 | 0.54393 | 0.50025 | 0.46043 | 0.42410 | 0.39992 | 0.36061 |
| 10 | 0.97534 | 0.95135 | 0.92800 | 0.90529 | 0.86167 | 0.82035 | 0.7812 | 0.74409 | 0.67556 | 0.61391 | 0.55839 | 0.50835 | 0.46319 | 0.42241 | 0.38554 | 0.35218 | 0.32197 |
| 11 | 0.97291 | 0.94661 | 0.92109 | 0.89632 | 0.84893 | 0.80426 | 0.76214 | 0.72242 | 0.64958 | 0.58468 | 0.52679 | 0.47509 | 0.42888 | 0.38753 | 0.35049 | 0.31728 | 0.28748 |
| 12 | 0.97048 | 0.94191 | 0.91424 | 0.88745 | 0.83639 | 0.78849 | 0.74356 | 0.70138 | 0.62460 | 0.55684 | 0.49697 | 0.44401 | 0.39711 | 0.35553 | 0.31863 | 0.28584 | 0.25668 |
| 13 | 0.96806 | 0.93722 | 0.90743 | 0.87866 | 0.82403 | 0.77303 | 0.72542 | 0.68095 | 0.60057 | 0.53032 | 0.46884 | 0.41496 | 0.36770 | 0.32618 | 0.28966 | 0.25751 | 0.22917 |
| 14 | 0.96565 | 0.93256 | 0.90068 | 0.86996 | 0.81185 | 0.75788 | 0.7077 | 0.66112 | 0.5774 | 0.50507 | 0.44230 | 0.38782 | 0.34046 | 0.29925 | 0.26333 | 0.23199 | 0.20462 |
| 15 | 0.96324 | 0.92792 | 0.89397 | 0.86135 | 0.79985 | 0.74301 | 0.69047 | 0.64186 | 0.55526 | 0.48102 | 0.41727 | 0.36245 | 0.31524 | 0.27454 | 0.23939 | 0.2990 | 0.18270 |
| 16 | 0.96084 | 0.92330 | 0.88732 | 0.85282 | 0.78803 | 0.72845 | 0.67362 | 0.62317 | 0.53391 | 0.45811 | 0.39365 | 0.33873 | 0.29189 | 0.25187 | 0.21763 | 0.18829 | 0.16312 |
| 17 | 0.95844 | 0.91871 | 0.88071 | 0.84438 | 0.77639 | 0.71416 | 0.65720 | 0.60502 | 0.51337 | 0.43630 | 0.37136 | 0.31657 | 0.27027 | 0.23107 | 0.19784 | 0.16963 | 0.14564 |
| 18 | 0.95605 | 0.91414 | 0.87416 | 0.83602 | 0.76491 | 0.70016 | 0.64117 | 0.58739 | 0.49363 | 0.41552 | 0.35034 | 0.29586 | 0.25025 | 0.21199 | 0.17986 | 0.15282 | 0.13004 |
| 19 | 0.95367 | 0.90959 | 0.86765 | 0.82774 | 0.75361 | 0.68643 | 0.62553 | 0.57029 | 0.47464 | 0.39573 | 0.33051 | 0.27651 | 0.23171 | 0.19449 | 0.16351 | 0.13768 | 0.11611 |
| 20 | 0.95129 | 0.90506 | 0.86119 | 0.81954 | 0.74247 | 0.67297 | 0.61027 | 0.55368 | 0.45639 | 0.37689 | 0.31180 | 0.25842 | 0.21455 | 0.17843 | 0.14864 | 0.12403 | 0.10367 |
| 21 | 0.94892 | 0.90056 | 0.85478 | 0.8143 | 0.73150 | 0.65978 | 0.59539 | 0.53755 | 0.43883 | 0.35894 | 0.29416 | 0.24151 | 0.19866 | 0.16370 | 0.13513 | 0.11174 | 0.09256 |
| 22 | 0.94655 | 0.89608 | 0.84842 | 0.80340 | 0.72069 | 0.64684 | 0.58086 | 0.52189 | 0.42196 | 0.34185 | 0.27751 | 0.22571 | 0.18394 | 0.15018 | 0.12285 | 0.10067 | 0.08264 |
| 23 | 0.94419 | 0.89162 | 0.84210 | 0.7954 | 0.71004 | 0.63416 | 0.56670 | 0.50669 | 0.40573 | 0.32557 | 0.26180 | 0.21095 | 0.17032 | 0.13778 | 0.11168 | 0.09069 | 0.07379 |
| 24 | 0.94184 | 0.88719 | 0.83583 | 0.78757 | 0.69954 | 0.62172 | 0.55288 | 0.49193 | 0.39012 | 0.31007 | 0.24698 | 0.19715 | 0.15770 | 0.12640 | 0.10153 | 0.08170 | 0.06588 |
| 25 | 0.93949 | 0.88277 | 0.82961 | 0.77977 | 0.68921 | 0.69953 | 0.53939 | 0.47761 | 0.37512 | 0.29530 | 0.23300 | 0.18425 | 0.14602 | 0.11597 | 0.09230 | 0.07361 | 0.05882 |
| 30 | 0.92783 | 0.86103 | 0.79919 | 0.74192 | 0.63976 | 0.55207 | 0.47674 | 0.41199 | 0.30832 | 0.23138 | 0.17411 | 0.13137 | 0.09938 | 0.07537 | 0.05731 | 0.04368 | 0.03338 |
| 35 | 0.91632 | 0.83982 | 0.76988 | 0.70591 | 0.59387 | 0.50003 | 0.42137 | 0.35538 | 0.25342 | 0.18129 | 0.13011 | 0.09366 | 0.06763 | 0.04899 | 0.03558 | 0.02592 | 0.01894 |
| 40 | 0.90495 | 0.81914 | 0.74165 | 0.67165 | 0.55126 | 0.45289 | 0.37243 | 0.30656 | 0.20829 | 0.14205 | 0.09722 | 0.06678 | 0.04603 | 0.03184 | 0.02209 | 0.01538 | 0.01075 |
| 50 | 0.88263 | 0.77929 | 0.68825 | 0.60804 | 0.47500 | 0.37153 | 0.29094 | 0.22811 | 0.14071 | 0.0872 | 0.05429 | 0.03395 | 0.02132 | 0.01345 | 0.00852 | 0.00542 | 0.00346 |


|  |  | A | B | C | D | E |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Date | Cash | Effective | Decrease in | Outstanding |
| PREMIUM COUPON RATE: 6\% |  |  | Interest / Payment | Interest | Balance | Balance |
|  |  |  | 6\% | 5\% |  | Carrying Value |
| MARKET RATE: 5\% |  |  |  |  |  |  |
|  |  |  | Principal x Coupon Rate | (Ex C) | (B-C) | (E-D) |
|  |  | 1/1/Y1 |  |  |  | \$735,533 |
|  |  | 6/30/Y1 | 42,000 | 36,777 (735,533 $\times 5 \%$ ) | 5,223 | 730,310 |
| BOND PRICE |  | 12/31/Y1 | 42,000 | 36,516 (730,310 $\times 5 \%$ ) | 5,484 | 724,826 |
| PV of Interest Cash Payments $\$ 42,000 \times 5.07569$ | \$213,179 | 6/30/Y2 | 42,000 | 36,241 (724,826x5\%) | 5,759 | 719,067 |
| Table: ordinary ammity ( $n=6, \mathrm{i}=5 \%$ ) |  | 12/31/Y2 | 42,000 | 35,953 (719,067 x 5\%) | 6,047 | 713,020 |
| PV of Principal $\$ 700,000 \times 0.74622$ | \$522,354 | 6/30/Y3 | 42,000 | 35,651 (713,020 x 5\%) | 6,349 | 706,671 |
| Table: PV of $51(n=6, i=5 \%)$ | \$735,533 | 12/31/Y3 | 42,000 | *35,329 (706,671 x 5\%) | 6,671 | 700,000 |
| © PROF. AIDA LOZADA, CPA, MBA, Ph.D. |  |  | 252,000 | 216,467 | 35,533 |  |
|  |  |  |  |  |  | (\$735,533-\$700,000) |  |
|  |  |  | COUPON RATE |  |  |  |
|  |  |  | Semi annual: $42,000 / 700,000=6 . \%$ |  |  |  |
|  |  |  | Annual: $84,000 / 700,000=12 \%$ |  |  |  |
|  |  |  | FFECTIVE/ MARKET INTEREST RATE |  |  |  |
|  |  |  | Semi annual: $36,777 / 735,533=5 \%$ |  |  |  |
|  |  |  | Annual: $36,677+36,516 / 735,533=10 \%$ |  |  | 20 |

## JOURNAL ENTRIES


#### Abstract

PREMIUM COUPON RATE: 6\% > MARKET RATE: 5\%


| BOND PRICE |  |
| :---: | :---: |
|  |  |
| PV of Interest Cash Payments | $\$ 213,179$ |
| $\$ 42,000 \times 5.07569$ |  |
| Table: ordinary annuity $(\mathrm{n}=6, \mathrm{i}=5 \%)$ |  |
| PV of Principal |  |
| $\$ 700,000 \times 0.74622$ | $\$ 522,354$ |
| Table: $\operatorname{PV}$ of $\$ 1(\mathrm{n}=6, \mathrm{i}=5 \%)$ |  |
|  | $\$ \mathbf{\$ 7 3 5 , 5 3 3}$ |



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## BOND PRICE

## DISCOUNT

COUPON RATE:6\%
<
MARKET RATE: 7\%

| BOND PRICE |  |
| :---: | :---: |
|  |  |
| PV of Interest Cash Payments | $\$ 200,195$ |
| $\$ 42,000 \mathrm{x} \times 4.76654$ |  |
| Table: ordinary ammity (1n-6, $\mathrm{i}=7 \%)$ |  |
| PV of Principal |  |
| $\$ 700,000 \times 0.66634$ | $\$ 466,438$ |
| Table: PV of $\$ 1(\mathrm{I}=6, \mathrm{i}=7 \%)$ |  |
|  | $\$ 666,633$ |


| er | PRESENT VALUE OF ORDINARY ANNUITY (annuity in arrears -- end of period payments) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\bigcirc$ | RATE PER PERIOD |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $s$ | 5\% | 0.50\% | 0.75\% | 1.00\% | 1.50\% | 2.00\% | 2.50\% | 3.00\% | 4.00\% | 5.00\% | 6.00\% | 7.00\% | 8.00\% | 9.00\% | 0.00\% | 1.00\% | 12.00\% |
| 1 | 0.99751 | 0.99502 | 0.99256 | 0.99010 | 0.98522 | 0.98039 | 0.97561 | 0.97087 | 0.96154 | 0.95238 | 0.94340 | 0.93458 | 0.92593 | 0.91743 |  | 0.90090 | 0.89286 |
| 2 | 1.99252 | 1.98510 | 1.97772 | 1.97040 | 1.95588 | 1.94156 | 1.92742 | 1.91347 | 1.88609 | 1.85941 | 1.83339 | 1.80802 | 1.78326 | 1.75911 | 1.73554 | 1.71252 | 1.69005 |
| 3 | 2.98506 | 2.97025 | 2.95556 | 2.94099 | 2.91220 | 2.88388 | 2.85602 | 2.82881 | 2.77509 | 2.72325 | 2.67301 | 2.62432 | 2.57710 | 2.53129 | 2.48685 | 2.44371 | 2.40183 |
| 4 | 3.97512 | 3.95050 | 3.92611 | 3.90197 | 3.85438 | 3.80773 | 3.76197 | 3.71710 | 3.62990 | 3.54595 | 3.46511 | 3.38721 | 3.31213 | 3.23972 | 3.16987 | 3.10245 | 3.03735 |
| 5 | 4.96272 | 4.92587 | 4.88944 | 4.85343 | 4.78264 | 4.71346 | 4.64583 | 4.57971 | 4.45182 | 4.32948 | 4.21236 | 4.10020 | 3.99271 | 3.88965 | 3.79079 | 3.69590 | 3.60478 |
| 6 | 5.94785 | 5.89638 | 5.84560 | 5.79548 | 5.69719 | 5.60143 | 5.50813 | 5.41719 | 5.24214 | 5.07569 | 4.91732 | 4.766 | 4.62288 | 4.48592 | 4.35526 | 4.23054 | 4.11141 |
| 7 | 6.93052 | 6.86207 | 6.79464 | 6.72819 | 6.59821 | 6.47199 | 6.34939 | 6.23028 | 6.00205 | 5.78637 | 5.58238 | 5.38929 | 5.20637 | 5.03295 | 4.86842 | 4.71220 | 4.56376 |
| - | 7.91074 | 7.82296 | 7.73661 | 7.65168 | 7.48593 | 7.32548 | 7.17014 | 7.01969 | 6.73274 | 6.46321 | 6.20979 | 5.97130 | 5.74664 | 5.53482 | 5.33493 | 5.14612 | 4.96764 |
| 9 | 8.88852 | 8.77906 | 8.67158 | 8.56602 | 8.36052 | 8.16224 | 7.97087 | 7.78611 | 7.43533 | 7.10782 | 6.80169 | 6.51523 | 6.24689 | 5.99525 | 5.75902 | 5.53705 | 5.32825 |
| 10 | 9.86386 | 9.73041 | 9.59958 | 9.47130 | 9.22218 | 8.98259 | 8.75206 | 8.53020 | 8.11090 | 7.72173 | 7.36009 | 7.02358 | 6.71008 | 6.41766 | 6.14457 | 5.88923 | 5.65022 |
| 11 | 10.83677 | 10.67703 | 10.52067 | 10.36763 | 10.07112 | 9.78685 | 9.51421 | 9.25262 | 8.76048 | 8.30641 | 7.88687 | 7.49867 | 7.13896 | 6.80519 | 6.49506 | 6.20652 | 5.93770 |
| 12 | 11.80725 | 11.61893 | 11.43491 | 11.25508 | 10.90751 | 10.57534 | 10.25776 | 9.95400 | 9.38507 | 8.86325 | 8.38384 | 7.94269 | 7.53608 | 7.16073 | 6.81369 | 6.49236 | 6.19437 |
| 13 | 12.77532 | 12.55615 | 12.34235 | 12.13374 | 11.73153 | 11.34837 | 10.98318 | 10.63496 | 9.98565 | 9.39357 | 8.85268 | 8.35765 | 7.90378 | 7.48690 | 7.10336 | 6.74987 | 6.42355 |
| 14 | 13.74096 | 13.48871 | 13.24302 | 13.00370 | 12.54338 | 12.10625 | 11.69091 | 11.29607 | 10.56312 | 9.89864 | 9.29498 | 8.74547 | 8.24424 | 7.78615 | 7.36669 | 6.98187 | 6.62817 |
|  | 14.70420 | 14.41662 | 14.13699 | 13.86505 | 13.34323 | 12.84926 | 12.38138 | 11.93794 | 11.11839 | 10.37966 | 9.71225 | 9.10791 | 8.55948 | 8.06069 | 7.60608 | 7.19087 | 6.81086 |
| 16 | 15.66504 | 15.33993 | 15.02431 | 14.71787 | 14.13126 | 13.57771 | 13.05500 | 12.56110 | 11.65230 | 10.83777 | 10.10590 | 9.44665 | 8.85137 | 8.31256 | 7.82371 | 7.37916 | 6.97399 |
| 17 | 16.62348 | 16.25863 | 15.90502 | 15.56225 | 14.90765 | 14.29187 | 13.71220 | 13.16612 | 12.16567 | 11.27407 | 10.47726 | 9.76322 | 9.12164 | 8.54363 | 8.02155 | 7.54879 | 7.11963 |
| 18 | 17.57953 | 17.17277 | 16.77918 | 16.39827 | 15.67256 | 14.99203 | 14.35336 | 13.75351 | 12.65930 | 11.68959 | 10.82760 | 10.05909 | 9.37189 | 8.75563 | 8.20141 | 7.70162 | 7.24967 |
| 19 | 18.53320 | 18.08236 | 17.64883 | 17.22601 | 16.42617 | 15.67846 | 14.97889 | 14.32380 | 13.13394 | 12.08532 | 11.15812 | 10.33560 | 9.60360 | 8.95011 | 8.36492 | 7.83929 | 7.36578 |
|  | 19.48449 | 18.98742 | 18.50802 | 18.04555 | 17.16864 | 16.35143 | 15.58916 | 14.87747 | 13.59033 | 12.46221 | 11.46992 | 10.59401 | 9.81815 | 9.12855 | 8.51356 | 7.96333 | 7.46944 |
| 21 | 20.43340 | 19.88798 | 19.36280 | 18.85698 | 17.90014 | 17.01121 | 16.18455 | 15.41502 | 14.02916 | 12.82115 | 11.76408 | 10.83553 | 10.01680 | 9.29224 | 8.64869 | 8.07507 | 7.56200 |
| 22 | 21.37995 | 20.78406 | 20.21121 | 19.66038 | 18.62082 | 17.65805 | 16.76541 | 15.93692 | 14.45112 | 13.16300 | 12.04158 | 11.06124 | 10.20074 | 9.44243 | 8.77154 | 8.17574 | 7.64465 |
| 23 | 22.32414 | 21.67568 | 21.05331 | 20.45582 | 19.33086 | 18.29220 | 17.33211 | 16.44361 | 14.85684 | 13.48857 | 12.30338 | 11.27219 | 10.37106 | 9.58021 | 8.88322 | 8.26643 | 7.71843 |
| 24 | 23.26598 | 22.56287 | 21.88915 | 21.24339 | 20.03041 | 18.91393 | 17.88499 | 16.93554 | 15.24696 | 13.79864 | 12.55036 | 11.46933 | 10.52876 | 9.70661 | 8.98474 | 8.34814 | 7.78432 |
| 25 | 24.20547 | 23.44564 | 22.71876 | 22.02316 | 20.71961 | 19.52346 | 18.42438 | 17.41315 | 15.62208 | 14.09394 | 12.78336 | 11.65358 | 10.67478 | 9.82258 | 9.07704 | 8.42174 | 7.84314 |
| 30 | 28.86787 | 27.79405 | 26.77508 | 25.80771 | 24.01584 | 22.39646 | 20.93029 | 19.60044 | 17.29203 | 15.37245 | 13.76483 | 12.40904 | 11.25778 | 10.27365 | 9.42691 | 8.69379 | 8.05518 |
| 35 | 33.47243 | 32.03537 | 30.68266 | 29.40858 | 27.07559 | 24.99862 | 23.14516 | 21.48722 | 18.66461 | 16.37419 | 14.49825 | 12.94767 | 11.65457 | 10.56682 | 9.64416 | 8.85524 | 8.17550 |
| 40 | 38.01986 | 36.17223 | 34.44694 | 32.83469 | 29.91585 | 27.35548 | 25.10278 | 23.11477 | 19.79277 | 17.15909 | 15.04630 | 13.33171 | 11.92461 | 10.75736 | 9.77905 | 8.95105 | 8.24378 |
| 50 | 46.94617 | 44.14279 | 41.56645 | 39.19612 | 34.99969 | 31.42361 | 28.36231 | 25.72976 | 21.48218 | 18.25593 | 15.76186 | 13.80075 | 12.23348 | 10.96168 | 9.91481 | 9.04165 | 8.30450 |


| e | PRESENT VALUE OF \$1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ${ }^{\circ}$ | RATE PER PERIOD |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $s$ | 0.25\% | 0.50\% | 0.75\% | 1.00\% | 1.50\% | 2.00\% | 2.50\% | 3.00\% | 4.00\% | 5.00\% | 6.00\% | 7.00\% | 8.00\% | 9.00\% | 10.00\% | 11.00\% | 12.0 |
| 1 | 0.99751 | 0.99502 | 0.99256 | 0.99010 | 0.98522 | 0.98039 | 0.97561 | 0.97087 | 0.96154 | 0.95238 | 0.94340 | 0.93458 | 0.92593 | 0.91743 | 0.90909 | 0.90090 | 0.89286 |
| 2 | 0.99502 | 0.99007 | 0.98517 | 0.98030 | 0.97066 | 0.96117 | 0.95181 | 0.94260 | 0.92456 | 0.90703 | 0.89000 | 0.8734 | 0.85734 | 0.84168 | 0.82645 | 0.81162 | 0.79719 |
| 3 | 0.99254 | 0.98515 | 0.97783 | 0.97059 | 0.95632 | 0.94232 | 0.92860 | 0.91514 | 0.88900 | 0.86384 | 0.83962 | 0.81630 | 0.79383 | 0.77218 | 0.75131 | 0.73119 | 0.71178 |
| 4 | 0.99006 | 0.98025 | 0.97055 | 0.96098 | 0.94218 | 0.92385 | 0.90595 | 0.88849 | 0.85480 | 0.82270 | 0.79209 | 0.76290 | 0.73503 | 0.70843 | 0.68301 | 0.65873 | 0.63552 |
| 5 | 0.98759 | 0.97537 | 0.96333 | 0.95147 | 0.98826 | 0.90573 | 0.88385 | 0.66261 | 0.82193 | 0.78353 | 0.74726 | 0.71299 | 0.68058 | 0.64993 | 0.62992 | 0.59345 | 0.56743 |
| 6 | 0.98513 | 0.97052 | 0.95616 | 0.94205 | 0.91454 | 0.88797 | 0.86230 | 0.83748 | 0.79031 | 0.74622 | 0.70496 | 0.6634 | 0.63017 | 0.59627 | 0.56447 | 0.53464 | 0.50663 |
| 7 | 0.98267 | 0.96569 | 0.94904 | 0.93272 | 0.90103 | 0.87056 | 0.84127 | 0.81309 | 0.75992 | 0.71068 | 0.66506 | 0.6275 | 0.58349 | 0.54703 | 0.51316 | 0.48166 | 0.45235 |
| 8 | 0.98022 | 0.96089 | 0.94198 | 0.92348 | 0.88771 | 0.85349 | 0.82075 | 0.78941 | 0.73069 | 0.67684 | 0.62741 | 0.58201 | 0.54027 | 0.50187 | 0.46651 | 0.43393 | 0.40388 |
| 9 | 0.97778 | 0.95610 | 0.93496 | 0.91434 | 0.87459 | 0.83676 | 0.8073 | 0.76642 | 0.70259 | 0.64461 | 0.59190 | 0.54393 | 0.50025 | 0.46043 | 0.42410 | 0.39092 | 0.36061 |
| 10 | 0.97534 | 0.95135 | 0.92800 | 0.90529 | 0.86167 | 0.82035 | 0.78120 | 0.74409 | 0.67556 | 0.61391 | 0.55839 | 0.50835 | 0.46319 | 0.42241 | 0.38554 | 0.35218 | 0.32197 |
| 11 | 0.97291 | 0.94661 | 0.92109 | 0.89632 | 0.84893 | 0.80426 | 0.76214 | 0.72242 | 0.64958 | 0.58468 | 0.52679 | 0.47509 | 0.42888 | 0.38753 | 0.35049 | 0.31728 | 0.28748 |
| 12 | 0.97048 | 0.94191 | 0.91424 | 0.88745 | 0.83639 | 0.78849 | 0.74356 | 0.70138 | 0.62460 | 0.55684 | 0.46997 | 0.44401 | 0.39711 | 0.35553 | 0.31863 | 0.28584 | 0.25668 |
| 13 | 0.96806 | 0.93722 | 0.9074 | 0.87866 | 0.82403 | 0.77303 | 0.72542 | 0.68095 | 0.60057 | 0.53032 | 0.46884 | 0.41496 | 0.36770 | 0.32618 | 0.28966 | 0.25751 | 0.22917 |
| 14 | 0.96565 | 0.93256 | 0.90068 | 0.86996 | 0.81185 | 0.75788 | 0.70773 | 0.66112 | 0.57748 | 0.50507 | 0.44230 | 0.38782 | 0.34046 | 0.29925 | 0.26333 | 0.23199 | 0.20462 |
| 15 | 0.96324 | 0.92792 | 0.89397 | 0.86135 | 0.79985 | 0.74301 | 0.6947 | 0.64186 | 0.55526 | 0.48102 | 0.41727 | 0.3624 | 0.31524 | 0.27454 | 0.23939 | 0.20900 | 0.18270 |
| 16 | 0.96084 | 0.92330 | 0.88732 | 0.85282 | 0.78803 | 0.72845 | 0.67362 | 0.62317 | 0.53391 | 0.45811 | 0.39365 | 0.33873 | 0.29189 | 0.25187 | 0.21763 | 0.18829 | 0.16312 |
| 17 | 0.95844 | 0.91871 | 0.88071 | 0.84438 | 0.77639 | 0.71416 | 0.65720 | 0.60502 | 0.51337 | 0.43630 | 0.37136 | 0.31657 | 0.27027 | 0.23107 | 0.19784 | 0.16963 | 0.14564 |
| 18 | 0.95605 | 0.91414 | 0.87416 | 0.83602 | 0.76491 | 0.70016 | 0.64117 | 0.58739 | 0.49363 | 0.41552 | 0.35034 | 0.2958 | 0.25025 | 0.21199 | 0.17986 | 0.15282 | 0.13004 |
| 19 | 0.95367 | 0.90959 | 0.86765 | 0.82774 | 0.75361 | 0.66843 | 0.62553 | 0.57729 | 0.47464 | 0.39573 | 0.33051 | 0.27651 | 0.23171 | 0.19449 | 0.16351 | 0.13768 | 0.11611 |
| 20 | 0.95129 | 0.90506 | 0.86119 | 0.81954 | 0.74247 | 0.67297 | 0.61027 | 0.55368 | 0.45639 | 0.37689 | 0.31180 | 0.25842 | 0.21455 | 0.17843 | 0.14864 | 0.12403 | 0.10367 |
| 21 | 0.94892 | 0.90056 | 0.85478 | 0.8143 | 0.73150 | 0.65978 | 0.59539 | 0.53755 | 0.43883 | 0.35894 | 0.29416 | 0.24151 | 0.19866 | 0.16370 | 0.13513 | 0.11174 | 0.09256 |
| 22 | 0.94655 | 0.89608 | 0.84842 | 0.80340 | 0.72069 | 0.64684 | 0.58086 | 0.52189 | 0.42196 | 0.34185 | 0.2751 | 0.22571 | 0.18394 | 0.15018 | 0.12285 | 0.10067 | 0.08264 |
| 23 | 0.94419 | 0.89162 | 0.84210 | 0.79544 | 0.71004 | 0.63416 | 0.56670 | 0.50669 | 0.40573 | 0.32557 | 0.26180 | 0.21095 | 0.17332 | 0.13778 | 0.11168 | 0.09069 | 0.07379 |
| 24 | 0.94184 | 0.88719 | 0.83583 | 0.78757 | 0.69954 | 0.62172 | 0.55288 | 0.49193 | 0.39012 | 0.31007 | 0.24698 | 0.19715 | 0.15770 | 0.12640 | 0.10153 | 0.08170 | 0.06588 |
| 25 | 0.93949 | 0.88277 | 0.82961 | 0.77977 | 0.68921 | 0.60953 | 0.53939 | 0.47761 | 0.37512 | 0.29530 | 0.23300 | 0.18425 | 0.14602 | 0.11597 | 0.09230 | 0.07361 | 0.05882 |
| 30 | 0.92783 | 0.86103 | 0.79919 | 0.74192 | 0.63976 | 0.55207 | 0.47674 | 0.41199 | 0.30832 | 0.23138 | 0.17411 | 0.13137 | 0.09938 | 0.07537 | 0.05731 | 0.04368 | 0.03338 |
| 35 | 0.91632 | 0.83982 | 0.76988 | 0.70591 | 0.59387 | 0.50003 | 0.42137 | 0.35538 | 0.25342 | 0.18129 | 0.13011 | 0.09366 | 0.06763 | 0.04899 | 0.03558 | 0.02592 | 0.01894 |
| 40 | 0.90495 | 0.81914 | 0.74165 | 0.67165 | 0.55126 | 0.45289 | 0.37243 | 0.30656 | 0.20829 | 0.14205 | 0.0972 | 0.06678 | 0.04603 | 0.03184 | 0.02209 | 0.01538 | 0.01075 |
| 50 | 0.88263 | 0.77929 | 0.68825 | 0.60804 | 0.47500 | 0.37153 | 0.2994 | 0.22811 | 0.14071 | 0.08720 | 0.05429 | 0.03395 | 0.02132 | 0.01345 | 0.00852 | 0.00542 | 0.00346 |


|  |  | A | B | C | D | E |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| DISCOU1 |  | Date | Cash | Effective | Decrease in | Outstanding |
| COUPON |  |  | Interest / Payment | Interest | Balance | Balance |
| < |  |  | 6\% | 7\% |  | Carrying Value |
| MARKET |  |  |  |  |  |  |
|  |  |  | Principal x Coupon Rate | (Ex C) | (B-C) | (E-D) |
| BOND PRIC |  | 1/1/Y1 |  |  |  | \$666,633 |
| PV of Interest Cash Payments | \$200,195 | 6/30/Y1 | 42,000 | 46,664 (666.633 $\times 7 \%$ ) | 4,664 | 671,297 |
| \$42,000 $\times 4.76654$ |  | 12/31/Y1 | 42,000 | 46,991 (671,297 X 7\%) | 4,991 | 676,288 |
| Table: ordinary amity (1-6, , i 7 7\%) |  | 6/30/Y2 | 42,000 | 47,340 (676,288 X 7\%) | 5,340 | 681,628 |
| PV of Principal |  | 12/31/Y2 | 42,000 | 47,714 (681,628 X 7\%) | 5,714 | 687,342 |
| \$700,000 0 0.66634 | \$466,438 | 6/30/Y3 | 42,000 | 48,114 (687,342 $\times 7 \%)$ | 6,114 | 693,456 |
|  | \$666,633 | 12/31/Y3 | 42,000 | *48,544 (693,456 X 7\%) | 6,544 | 700,000 |
|  |  |  | 252,000 | 285,367 | 33,367 |  |
|  |  |  |  |  | (\$666,633-\$700,000) |  |
|  |  |  | COUPON RATE |  |  |  |
|  |  |  | Semi annual: $42,000 / 700,000=6 . \%$ |  |  |  |
|  |  |  | Annual: $84,000 / 700,000=12 \%$ |  |  |  |
|  |  |  | FFECTIVE/ MARKET INTEREST RATE |  |  |  |
|  |  |  | Semi annual:46,664 / 666,633 $=7 \%$ |  |  |  |
|  |  |  | Annual:46,664 $+46,991 / 666,633=14 \%$ |  |  |  |

*rounded

JOURNAL ENTRIES

## DISCOUNT

 COUPON RATE <MARKET RATE

| BOND PRICE |  |
| :---: | :---: |
|  |  |
| PV of Interest Cash Payments | $\$ 200,195$ |
| $\$ 42,000 \times \times 4.76654$ |  |
| Table: ordinary annuity $(\mathrm{n}=6, \mathrm{i}=7 \%)$ |  |
| PV of Principal |  |
| $\$ 700,000 \times 0.66634$ | $\$ 466,438$ |
| Table: $\operatorname{PV}$ of $\$ 1(\mathrm{n}=6, \mathrm{i}=7 \%)$ |  |
|  | $\$ \mathbf{4 6 6 6 , 6 3 3}$ |

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| JOURNAL ENTRIES |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1/1/Y1 |  |  | 12/31/Y3 |  |  |
| Dr. Cash | 666,633 |  | Dr. Bonds Payable | 700,000 |  |
| Dr. Discount on Bonds Payable | 33,367 |  | Cr. Cash |  | 700,000 |
| Cr. Bonds Payable |  | 700,000 |  |  |  |
| To record bond issue. |  |  | To record bond principal payment |  |  |
|  |  |  |  |  |  |
| 6/30/Y1 |  |  | 6/30/Y3 |  |  |
| Dr. Interest Expense | 46,664 |  | Dr. Interest Expense | 48,114 |  |
| Cr. DiscountAmortizaion |  | 4,664 | Cr. DiscountAmortizaion |  | 6,114 |
| Cr. Cash |  | 42,000 | Cr. Cash |  | 42,000 |
| To record interest payment |  |  | To record interest payment |  |  |
| 12/31/Y1 |  |  | 12/31/Y3 |  |  |
| Dr. Interest Expense | 46,991 |  | Dr. Interest Expense | 48,544 |  |
| Cr. DiscountAmortizaion |  | 4,991 | Cr. DiscountAmortizaion |  | 6,544 |
| Cr. Cash |  | 42,000 | Cr. Cash |  | 42,000 |
| To record interest payment |  |  | To record interest payment |  |  |
| 6/30/Y2 |  |  |  |  |  |
| Dr. Interest Expense | 47,340 |  |  |  |  |
| Cr. DiscountAmortizaion |  | 5,340 |  |  |  |
| Cr. Cash |  | 42,000 |  |  |  |
| To record interest payment |  |  |  |  |  |
| 12/31/Y2 |  |  |  |  |  |
| Dr. Interest Expense | 47,714 |  |  |  |  |
| Cr. DiscountAmortizaion |  | 5,714 |  |  |  |
| Cr. Cash |  | 42,000 |  | 25 |  |
| To record interest payment |  |  |  |  |  |


| BOND PRICE |  |
| :---: | :---: |
|  |  |
| PV of Interest Cash Payments | $\$ 200,195$ |
| $\$ 42,000 \times 4.76654$ |  |
| Table: ordinary ammity $(11=6, \mathrm{i}=7 \%)$ |  |
| PV of Principal |  |
| $\$ 700,000 \times 0.66634$ | $\$ 466,438$ |
| Table: PV of $\$ 1(\mathbb{I F} 6, \mathrm{i}=7 \%)$ |  |
|  | $\$ 666,633$ |


| A | B | C | D | E |
| :---: | :---: | :---: | :---: | :---: |
| Date | Cash | Effective | Decrease in | Outstanding |
|  | Interest / Payment | Interest | Balance | Balance |
|  | 6\% | 7\% |  | Carrying Value |
|  | Principal x Coupon Rate | (ExC) | (B-C) | (E-D) |
| 1/1/Y1 |  |  |  | \$666,633 |
| 6/30/Y1 | 42,000 | 46,664 (666.633 X 7\%) | 4,664 | 671,297 |
| 12/31/Y1 | 42,000 | 46,991 (671,297 X 7\%) | 4,991 | 676,288 |
| 6/30/Y2 | 42,000 | 47,340 (676,288 X 7\%) | 5,340 | 681,628 |
| 12/31/Y2 | 42,000 | 47,714 (681,628 X 7\%) | 5,714 | 687,342 |
| 6/30/Y3 | 42,000 | 48,114 (687,342 X 7\%) | 6,114 | 693,456 |
| 12/31/Y3 | 42,000 | *48,544 (693,456 X 7\%) | 6,544 | 700,000 |
|  | 252,000 | 285,367 | 33,367 |  |
|  |  |  | (\$666,633-\$700,000) |  |
|  | COUPON RATE |  |  |  |
|  | Semi annual: $42,000 / 700,000=6 . \%$ |  |  |  |
|  | Annual: $84,000 / 700,000=12 \%$ |  |  |  |
|  | FFECTIVE/ MARKET INTEREST RATE |  |  |  |
|  | Semi annual:46,664 / 666,633 $=7 \%$ |  |  |  |
|  | Annual: $46,664+46,991 / 666,633=14 \%$ |  |  |  |


| JOURNAL ENTRIES |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1/1/Y1 |  |  | 12/31/Y3 |  |  |
| Dr. Cash | 666,633 |  | Dr. Bonds Payable | 700,000 |  |
| Dr. Discount on Bonds Payable | 33,367 |  | Cr. Cash |  | 700,000 |
| Cr. Bonds Payable |  | 700,000 |  |  |  |
| To record bond issue. |  |  | To record bond principal payment |  |  |
|  |  |  |  |  |  |
| 6/30/Y1 |  |  | 6/30/Y3 |  |  |
| Dr. Interest Expense | 46,664 |  | Dr. Interest Expense | 48,114 |  |
| Cr. DiscountAmortizaion |  | 4,664 | Cr. DiscountAmortizaion |  | 6,114 |
| Cr. Cash |  | 42,000 | Cr. Cash |  | 42,000 |
| To record interest payment |  |  | To record interest payment |  |  |
| 12/31/Y1 |  |  | 12/31/Y3 |  |  |
| Dr. Interest Expense | 46,991 |  | Dr. Interest Expense | 48,544 |  |
| Cr. DiscountAmortizaion |  | 4,991 | Cr. DiscountAmortizaion |  | 6,544 |
| Cr. Cash |  | 42,000 | Cr. Cash |  | 42,000 |
| To record interest payment |  |  | To record interest payment |  |  |
| 6/30/Y2 |  |  |  |  |  |
| Dr. Interest Expense | 47,340 |  |  |  |  |
| Cr. DiscountAmortizaion |  | 5,340 |  |  |  |
| Cr. Cash |  | 42,000 |  |  |  |
| To record interest payment |  |  |  |  |  |
| 12/31/Y2 |  |  |  |  |  |
| Dr. Interest Expense | 47,714 |  |  |  |  |
| Cr. DiscountAmortizaion |  | 5,714 |  |  |  |
| Cr. Cash |  | 42,000 |  | 26 |  |
| To record interest payment |  |  | 26 |  |  |


| AMORTIZATION TABLE: BOND ISSUED AT PAR |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| A | B | C | D | E |
| Date | Cash | Effective | Decrease in | Outstanding |
|  | Interest / Payment | Interest | Balance | Balance |
|  | 6\% | 6\% |  | Carrying Value |
|  |  |  |  |  |
|  | Principal C Coupon Rate | (ExC) | (B-C) | (E-D) |
| 1/1/Y1 |  |  |  | \$700,000 |
| 6/30/Y1 | 42,000 | 42,000 (700,000 X . 06 ) | 0 | 700,000 |
| 12/31/Y1 | 42,000 | 42,000 (700,000 X . 06 ) | 0 | 700,000 |
| 6/30/Y2 | 42,000 | 42,000 (700,000 X . 06 ) | 0 | 700,000 |
| 12/31/Y2 | 42,000 | 42,000 (700,000 X . 06 ) | 0 | 700,000 |
| 6/30/Y3 | 42,000 | 42,000 (700,000 X . 06 ) | 0 | 700,000 |
| 12/31/Y3 | 42,000 | 42,000 (700,000 X . 06 ) | 0 | 700,000 |
|  | 252,000 | 216,467 | 0 |  |


| AMORTIZATION TABLE: BOND ISSUED AT PREMIUM |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| A | B | C | D | E |
| Date | Cash | Effective | Decrease in | Outstanding |
|  | Interest / Payment | Interest | Balance | Balance |
|  | 6\% | 5\% |  | Carrying Value |
|  |  |  |  |  |
|  | Principal x Coupon Rate | (ExC) | (B-C) | (E-D) |
| 1/1/Y1 |  |  |  | \$735,533 |
| 6/30/Y1 | 42,000 | 36,777 (735,533 x 5\%) | 5,223 | 730,310 |
| 12/31/Y1 | 42,000 | 36,516 (730,310 5 5\%) | 5,484 | 724,826 |
| 6/30/Y2 | 42,000 | 36,241 (724,826 $\times 5 \%$ ) | 5,759 | 719,067 |
| 12/31/Y2 | 42,000 | 35,953 (719,067 $\times 5 \%$ ) | 6,047 | 713,020 |
| 6/30/Y3 | 42,000 | 35,651 (713,020 5 5\%) | 6,349 | 706,671 |
| 12/31/Y3 | 42,000 | *35,329 (706,671 $\times 5 \%$ ) | 6,671 | 700,000 |
|  | 252,000 | 216,467 | 35,533 |  |
|  |  |  | (\$735,533-\$700,000) |  |


| AMORTIZATION TABLE: BOND ISSUED AT DISCOUNT |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| A | B | C | D | E |
| Date | Cash | Effective | Decrease in | Outstanding |
|  | Interest / Payment | Interest | Balance | Balance |
|  | 6\% | 7\% |  | Carrying Value |
|  |  |  |  |  |
|  | Principal x Coupon Rate | (ExC) | (B-C) | (E-D) |
| 1/1/Y1 |  |  |  | \$666,633 |
| 6/30/Y1 | 42,000 | 46,664 (666.633 X 7\%) | 4,664 | 671,297 |
| 12/31/Y1 | 42,000 | 46,991 (671,297 X 7\%) | 4,991 | 676,288 |
| 6/30/Y2 | 42,000 | 47,340 (676,288 $\times 7 \%$ ) | 5,340 | 681,628 |
| 12/31/Y2 | 42,000 | 47,714 (681,628 7 7\%) | 5,714 | 687,342 |
| 6/30/Y3 | 42,000 | 48,114 (687,342 $\times 7 \%)$ | 6,114 | 693,456 |
| 12/31/Y3 | 42,000 | * 48,544 (693,456 X 7\%) | 6,544 | 700,000 |
|  | 252,000 | 285,367 | 33,367 |  |
|  |  |  | (\$666,633-5700,000) |  |


| BALANCE SHEET: BONDS PAYABLE SCHEDULE |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: |
| DECEMBER 31 XXXX |  |  |  |  |
| PAR |  |  |  |  |
| BONDS PAYABLE | $\mathbf{1 / 1 / Y 1}$ | $\mathbf{1 2 / 3 1 / Y 1}$ | $\mathbf{1 2 / 3 1 / Y 2}$ |  |
| 12/31/Y3 |  |  |  |  |
| CARRYING VALUE | $\$ 700,000$ | $\$ 700,000$ | $\$ 700,000$ |  |$\$ 700,000 \quad 1$


| BALANCE SHEET: BONDS PAYABLE SCHEDULE: PAR |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: |
| DECEMBER 31 XXXX |  |  |  |  |
| PREMIUM |  |  |  |  |
|  | $\mathbf{1 / 1 / \mathbf { Y 1 }}$ | $\mathbf{1 2 / 3 1 / \mathbf { Y 1 }}$ | $\mathbf{1 2 / 3 1 / \mathbf { Y 2 }}$ | $\mathbf{1 2 / 3 1 / \mathbf { Y 3 }}$ |
| BONDS PAYABLE | $\$ 700,000$ | $\$ 700,000$ | $\$ 700,000$ | $\$ 700,000$ |
| ADD: UNAMORTIZED PREMIUM | 35,533 | 24,826 | 13,020 | 0 |
| CARRYING VALUE | $\$ 735,533$ | $\$ 724,826$ | $\$ 713,020$ | $\$ 700,000$ |


| BALANCE SHEET: BONDS PAYABLE SCHEDULE: PAR |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: |
| DECEMBER 31 XXXX |  |  |  |  |
| DISCOUNT |  |  |  |  |
| BONDS PAYABLE | $\mathbf{1 / 1 / Y 1}$ | $\mathbf{1 2 / 3 1 / Y 1}$ | $\mathbf{1 2 / 3 1 / Y 2}$ | $\mathbf{1 2 / 3 1 / Y 3}$ |
| LESS: UNAMORTIZED PREMIUM | 33,367 | 23,712 | 12,658 | 0 |
| CARRYING VALUE | $\mathbf{\$ 6 6 6 , 6 3 3}$ | $\mathbf{\$ 6 7 6 , 2 8 8}$ | $\mathbf{\$ 6 8 7 , 3 4 2}$ | $\mathbf{\$ 7 0 0 , 0 0 0}$ |

## Early Extinguishment of Debt (Bond)

1. Debt is retired prior to its scheduled maturity date:
2. Any difference between the outstanding debt and the amount paid to retire that debt represents a gain or loss.

## 12/31Y2

\section*{Call price: Carrying Value: <br> Loss on Early Extinguishment of Debt <br> | $\$ 725,000$ |
| :--- |
| $\$ 700,000$ |
| $\$ 25,000)$ |}


| A | B | C | D | E |
| :---: | :---: | :---: | :---: | :---: |
| Date | Cash | Effective | Decrease in | Outstanding |
|  | Interest / Payment | Interest | Balance | Balance |
|  | 6\% | 6\% |  | Carrying Value |
|  |  |  |  |  |
|  | Principal x Coupon Rate | (Ex C) | (B-C) | (E-D) |
| 1/1/Y1 |  |  |  | \$700,000 |
| 6/30/Y1 | 42,000 | 42,000 (700,000 X .06) | 0 | 700,000 |
| 12/31/Y1 | 42,000 | 42,000 (700,000 X .06) | 0 | 700,000 |
| 6/30/Y2 | 42,000 | 42,000 (700,000 X .06) | 0 | 700,000 |
| 12/31/Y2 | 42,000 | 42,000 (700,000 X .06) | 0 | 700,000 |
| 6/30/Y3 | 42,000 | 42,000 (700,000 X .06) | 0 | 700,000 |
| 12/31/Y3 | 42,000 | 42,000 (700,000 X .06) | 0 | 700,000 |
|  | 252,000 | 216,467 | 0 |  |
|  |  |  |  |  |
|  | COUPON RATE |  |  |  |
|  | Semi annual: $42,000 / 700,000=6 . \%$ |  |  |  |
|  | Annual: $84,000 / 700,000=12 \%$ |  |  |  |
|  | FFECTIVE/ MARKET INTEREST RATE |  |  |  |
|  | Semi annual: $42,000 / 700,000=6 . \%$ |  |  |  |
|  | Annual: $84,000 / 700,000=12 \%$ |  |  |  |

