T2 is the sum of T1 and—

(i) Where an amount is payable on the date, zero; or

(ii) In any other case, the number of days between the preceding due date and the date calculated on a 365 day basis.

7. *Example*—(1) *Example A* (a) This example illustrates Method A, using the same example as in Determination G3: Yield to Maturity Method and Determination G11: Present Value Based Yield to Maturity Method, Example A. The example shows that the present value at the beginning of a period is the same as the principal outstanding during the period.

On 12 March 1987 (the specified date) a holder acquires for $1,012,500 the right to receive the following income—

15 May 1987	$70,000
15 November 1987	$70,000
15 May 1988	$70,000
15 November 1988	$1,070,000

The greatest common divisor of all periods except the first is 6 months, so that $N = 2$; in the first (broken) period ending on 15 May 1987

$$N = \frac{365}{64} = 5.703125$$

The specified rate R is 16.2308% per annum.

Therefore $F = 0.028459$ in the period ending 15/5/1987 and 0.081154 in all remaining periods.

(b) The following schedule may then be constructed, starting at the bottom and working up:

Period Ending	Present Value at Beginning	Payments by Issuer B	Payments by Holder C	Present Value at End A
15/5/87	1,012,500	70,000	–	971,315
15/11/87	971,315	70,000	–	980,141
15/5/88	980,141	70,000	–	989,683
15/11/88	989,683	1,070,000	–	–

The present value at the beginning of the first period is the same as the acquisition price, verifying that the specified rated is equal to the yield to maturity for this transaction.

(2) *Example B*—(a) This example illustrates Method B, using the same example as in Determination G3: Yield to Maturity Method and Determination G11: Present Value Based Yield to Maturity Method, Example B.

On 12 March 1987 (the specified date) a holder acquires for $1,012,500 the right to receive the following income—

15 May 1987	$70,000
15 November 1987	$70,000
15 May 1988	$70,000
15 November 1988	$1,070,000

All amounts are expressed in New Zealand dollars.

Amounts are payable at regular half-yearly intervals, so that $N = 2$ and the preceding due date is 6 months prior to 15 May 1987, namely 15 November 1986.

Also, T1 = T2 except for the first (broken) period ending on 15 May 1987 for which

T1 = 15/5/87 − 12/3/87 = 64 days, and

T2 = 64 days + 12/3/87 − 15/11/86 = 181 days.

The specified rate R is 16.265% per annum. (See footnote to this Example B for details of calculating using the HP12C calculator.)

Therefore F = 0.081325, and
D = 1.028032 in the period ending 15/5/87 (that being (1 ÷ f) to the power of 64/181) and 1.081325 in all the remaining periods.

(b) The following schedule may then be constructed, starting at the bottom and working up:

Period Ending	Present Value at Beginning	Payments by Issuer B	Payments by Holder C	Present Value at End A
15/5/87	1,012,500	70,000	–	970,884
15/11/87	970,884	70,000	–	979,841
15/5/88	979,841	70,000	–	989,527
15/11/88	989,527	1,070,000	–	–

The present value at the beginning of the first period is the same as the acquisition price, verifying that the specified rate is equal to the yield to maturity for this transaction.

(c) *Footnote:* The calculations in Example B may be made using the BOND PRICE and BOND YTM functions on the HP12C (or equivalent) calculator.

(i) *Calculating the Specified Rate, R.* The HP12C assumes that the purchase price excludes accrued interest, whereas the actual purchase price of $1,012,500 includes accrued interest from 15 November 1986 to 12 March 1987. This accrued interest is calculated as follows, per $100 nominal:

Set up		(g) (D.MY)
Any YTM	0	(i)
Coupon Percent p.a.	14	(PMT)
Purchase date	12.031987	(STO) 1
		(ENTER)
Maturity date	15.111988	(STO) 2
		(f) (PRICE)
		(X ≳ Y) 4.524862

This amount is then subtracted from the purchase price per $100 nominal, of $101.25, to give the ex-accrued interest purchase price.

Purchase price	101.25	(X ≳ Y)
		(-) 96.725138

The specified rate (R) can then be calculated using the BOND YTM function:

Ex-accrued interest price	(PV)
Purchase date	(RCL) 1
Maturity date	(RCL) 2
	(f) (YTM) 16.265%

(ii) *Calculating the present values.* The "Present Values at Beginning" shown in the schedule may be calculated directly using the BOND PRICE function. The following steps reproduce the value at 15 November 1987 for example:

Specified rate	16.265	(i)
Coupon % p.a.	14	(PMT)
Value date	15.111987	(ENTER)
Maturity date	15.111988	(f) (PRICE) 97.984116
Add accrued interest		(+) 97.984116

which is the per $100 nominal price corresponding to $979,841.

This Determination is signed by me on the 23rd day of April in the year 1990.

R. D. ADAIR, Deputy Commissioner.

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