ECS2605-J

The South African Financial system

The money market

Money market calculations

Different types of financial instruments

- Discount instruments
- Interest add-on instruments
- Repurchase agreements
- Bond instruments

How do you distinguish among instruments?

- You learn it off by heart!

Discount instrument	Interest add-on instruments	Others
•Bankers' acceptances •Treasury bills •Land Bank bills •Commercial paper •Promissory notes •Capital project bills	•Reserve bank debenture •Negotiable certificate of deposit •Roads board bridging bonds •Transnet coupon stock	•Repurchase agreement

Discount instruments

Discount instruments

- Nominal value $\longrightarrow$ N
- Discount rate $\longrightarrow$ i_d (per year)
- Days to maturity $\longrightarrow$ d
- Price $\longrightarrow$ P (in rand %)
- Yield $\longrightarrow$ i_y (per year)
- n $\longrightarrow$ d/365

Discount instruments

Assignment 02 questions 1 and 2
Nominal value: R11 000 000
Issue date: 1 January 2011
Expiry date: 31 March 2011

How do we know it is a discount instrument?

On 1 January 2011, this Land Bank bill was issued at a discount rate of 7.500%. On the 25th of February 2011, this instrument trades at a discount of 8.250%. The number of days from 1 January 2011 to 31 March is 89 and from 25 February 2011 to 31 March there are 34 days How much did the seller get from selling the bill on the 25th of February 2011 in the secondary market?

Discount instruments

Given: N = R11m

8,25% or 0,0825

4 days thus n = 34/365

Consideration

Discount

$= N - (N \times i_d \times n)$

$= R11m - (R11m \times 0,0825 \times 34/365)$

$= R11m - (R11m \times 0,0825 \times 0,0932)$

$= R11m - R84\ 534,25$

$= R10\ 915\ 465,75$

$\approx R10\ 915\ 466$

Thus: [4] is correct option

Discount instruments

Assignment 02 questions 1 and 2

Nominal value: R11 000 000

Issue date: 1 January 2011

Expiry date: 31 March 2011

On 1 January 2011, this Land Bank bill was issued at a discount rate of 7,500%. On the 25th of February 2011, this instrument trades at a discount of 8,250%. The number of days from 1 January 2011 to 31 March is 89 and from 25 February 2011 to 31 March there are 34 days

The maturity value was......

The correct alternative is [3]

Discount instruments

Assignment 02 questions 1 and 2
Nominal value: R11 000 000
Issue date: 1 January 2011
Expiry date: 31 March 2011

On 1 January 2011, this Land Bank bill was issued at a discount rate of 7.500%. On the 25th of February 2011, this instrument trades at a discount of 8.250%. The number of days from 1 January 2011 to 31 March is 89 and from 25 February 2011 to 31 March there are 34 days

What is the yield?

<u>Yield</u>

(Actual return per annum)

Yield per annum

$$= (\text{Return/buying price}) \times (365/d)$$

For a discount instrument:
$$= (\text{Discount/consideration}) \times (365/d)$$

Discount instruments

Given: N = **R11m**

i = **8,25% or 0,0825** → *Discount N*

d_h = **34 = 34 days**

Consideration = **R10 915 466**

Discount = **R84 534** → *Discount C*

Yield for a discount instrument:

= (Discount/consideration) x (365/d_h)
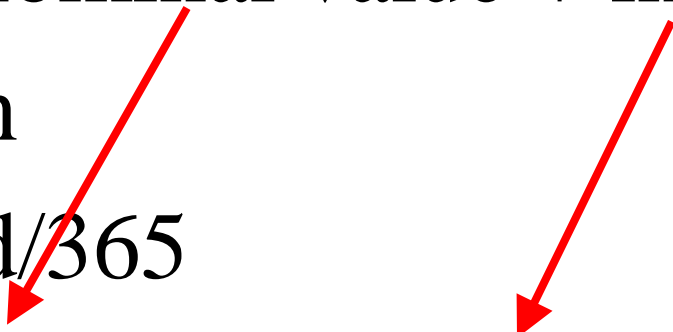
= (R84 534 / R10 915 466) x (365/34)

= 0,00774 x 10,735

= 0,0831 or 8,31% → *Higher than discount rate*

Interest add-on securities

- Maturity value = nominal value + interest

Interest add-on securities

- Maturity value = nominal value + interest
- Interest = N x i x n

    = N x i x d/365

- Maturity value = N + (N x i x d/365)

    = N[1 + (i x d/365)]

Interest add-on securities

Assignment 02 questions 3

Bank VW issued NCDs worth R5m at an annual interest rate of 13%. They will expire in 115 days. 90 days later (i.e. 25 days before expiry) the NCDs are traded at a market interest rate of 9%.

On issue Bank VW received …….

Interest add-on securities issued at nominal value.

Correct answer is [3].

Interest add-on securities

Assignment 02 questions 4

Bank VW issued NCDs worth R5m at an annual interest rate of 13%. They will expire in 115 days. 90 days later (i.e. 25 days before expiry) the NCDs are traded at a market interest rate of 9%.

The consideration in the secondary market is ....

$$P = MV / (1 + i \times n)$$

Have to calculate first

Interest add-on securities

Assignment 02 questions 4

Bank VW issued NCDs worth R5m at an annual interest rate of 13%. They will expire in 115 days. 90 days later (i.e. 25 days before expiry) the NCDs are traded at a market interest rate of 9%.

$$MV = NV \times (1 + i \times n)$$
$$= R5\ 000\ 000 \times (1 + 0{,}13 \times 115/365)$$
$$= R5\ 000\ 000 \times (1 + 0{,}040959)$$
$$= R5\ 000\ 000 \times 1{,}040959$$
$$= R5\ 204\ 795$$

Interest add-on securities

Assignment 02 questions 4

Bank VW issued NCDs worth R5m at an annual interest rate of 13%. They will expire in 115 days. 90 days later (i.e. 25 days before expiry) the NCDs are traded at a market interest rate of 9%.

The consideration in the secondary market is ....

$$P = MV / (1 + i \times n)$$

Now we have calculated M

Interest add-on securities

<u>**Assignment 02 questions 4**</u>

Bank VW issued NCDs worth R5m at an annual interest rate of 13%. They will expire in 115 days. 90 days later (i.e. 25 days before expiry) the NCDs are traded at a market interest rate of 9%.

$$
\begin{aligned}
P &= MV / (1 + i \times n) \\
&= R5\ 204\ 795 / (1 + 0{,}09 \times 25/365) \\
&= R5\ 204\ 795 / (1 + 0{,}0062) \\
&= R5\ 204\ 795 / 1{,}0062 \\
&= R5\ 172\ 907
\end{aligned}
$$

Correct answer is [1].

Interest add-on securities

Bank VW issued NCDs worth R5m at an annual interest rate of 13%. They will expire in 115 days. 90 days later (i.e. 25 days before expiry) the NCDs are traded at a market interest rate of 9%.

The seller in the secondary market realised a capital profit/loss of ....

How to determine profit / loss
- Total income
- Accrued interest
- Profit (Loss) = Total income – accrued interest

Interest add-on securities

Assignment 02 questions 5

Bank VW issued NCDs worth R5m at an annual interest rate of 13%. They will expire in 115 days.

90 days later (i.e. 25 days before expiry) the NCDs are traded at a market interest rate of 9%.

The seller in the secondary market realised a capital profit/loss of ....

How to determine profit / loss
- Total income: Amount sold at – amount bought for
- R 5 172 907 – R5 000 000 = R172 907

Interest add-on securities

Assignment 02 questions 5

Bank VW issued NCDs worth R5m at an annual interest rate of 13%. They will expire in 115 days. 90 days later (i.e. 25 days before expiry) the NCDs are traded at a market interest rate of 9%.

The seller in the secondary market realised a capital profit/loss of ....

- Total income ✔
- Accrued interest
- Profit (Loss) = Total income – accrued interest

Interest add-on securities –secondary market
Assignment 02 questions 5

Bank VW issued NCDs worth R5m at an annual interest rate of 13%. They will expire in 115 days. 90 days later (i.e. 25 days before expiry) the NCDs are traded at a market interest rate of 9%.

Accrued interest $=$ Amount paid x i x n

$=$ R5 000 000 x 0,13 x 90/365

$=$ R5 000 000 x 0,0321

$=$ R160 273,97

$\approx$ R160 274

Interest add-on securities

Assignment 02 questions 5

Bank VW issued NCDs worth R5m at an annual interest rate of 13%. They will expire in 115 days. 90 days later (i.e. 25 days before expiry) the NCDs are traded at a market interest rate of 9%.

The seller in the secondary market realised a capital profit/loss of ....

How to determine profit / loss
- Total income ✔
- Accrued interest ✔
- Profit (Loss) = Total income – accrued interest

Interest add-on securities

Assignment 02 questions 5

Bank VW issued NCDs worth R5m at an annual interest rate of 13%. They will expire in 115 days. 90 days later (i.e. 25 days before expiry) the NCDs are traded at a market interest rate of 9%.

The seller in the secondary market realised a capital profit/loss of ....

Profit (Loss) = Total income – accrued interest
= R172 907- R 160 274
= R12 633

Thus the correct answer is [3].

Interest add-on securities –secondary market

- When i ↑ prices of securities ↓

- When i ↑ a capital loss is made on interest add-on securities

- When i ↓ a capital profit is made on interest add-on securities

Bank VW issued NCDs worth R5m at an annual interest rate of 13% They will expire in 115 days.

90 days later (i.e. 25 days before expiry) the NCDs are traded at a market interest rate of 9%.

i ↓ thus capital profit

The seller in the secondary market realised a capital profit/loss of ....

Interest add-on securities – secondary market

Assignment 02 questions 6

Bank VW issued NCDs worth R5m at an annual interest rate of 13%. They will expire in 115 days. 90 days later (i.e. 25 days before expiry) the NCDs are traded at a market interest rate of 9%.

The seller in the secondary market's yield rate is….

Annual yield = Total income/price paid x $1/n_h$

Interest add-on securities – secondary market

Assignment 02 questions 6

Annual yield = Total income/price paid x $1/n_h$

Primary market

N → R5 000 000

i → $\boxed{0,13}$

d → 115

Consideration

Income →

Annual yield = R

Secondary market

MV → R5 2

i → 0,09

25

07

000 x 365/90

Number of days it belonged to seller: 115-25 =90

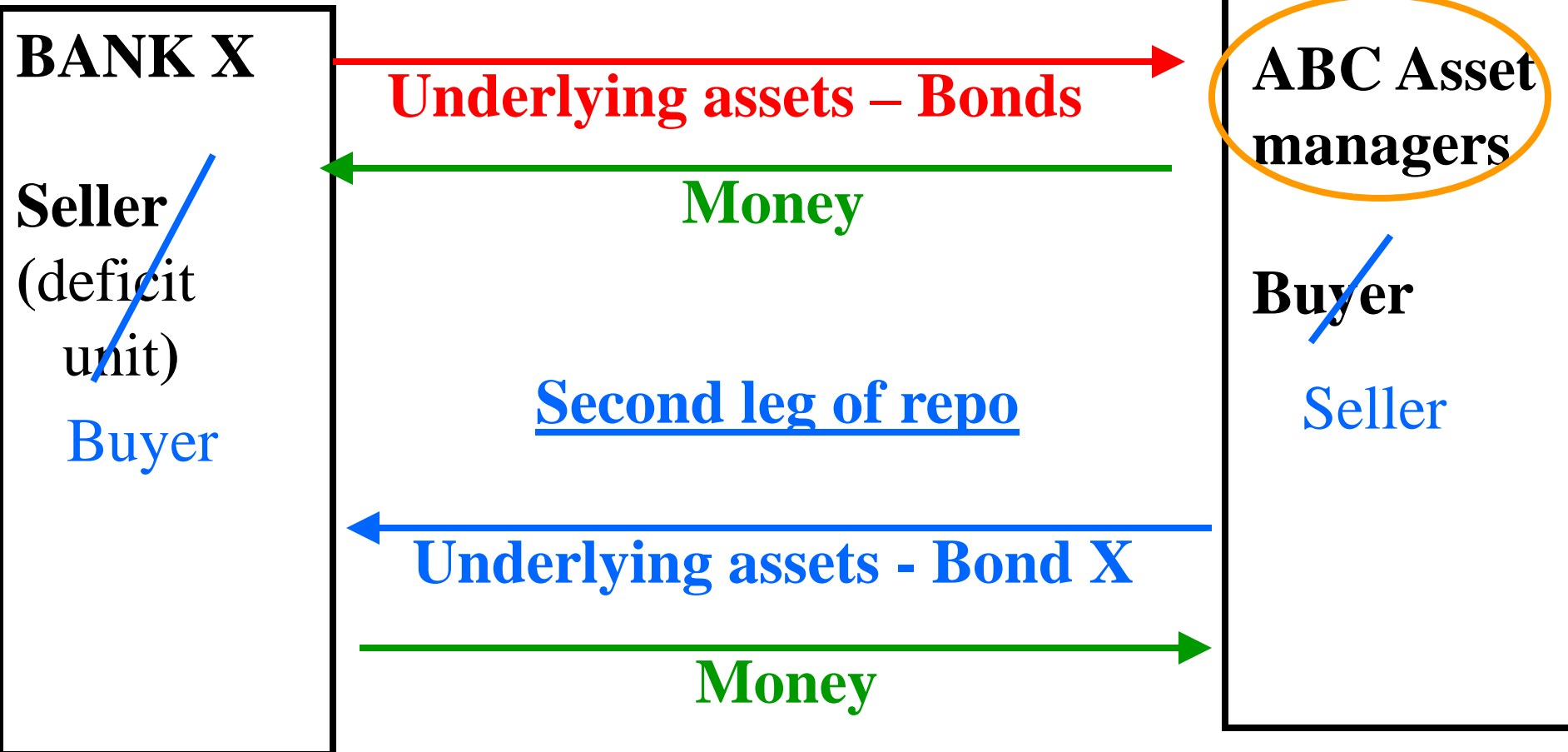Yield higher than i at which it was bought – indicate capital profit

= 0,0346 x 4,0556

= 0,1402 or 14,020%

Correct answer

Question 6: [1]

Repurchase agreement (repo)

Questions 7 and 8

Can be another bank or SARB

First leg of repo

BANK X		ABC Asset managers

Seller (deficit unit)

Buyer

Underlying assets – Bonds →

← Money

Buyer

Seller

Second leg of repo

← Underlying assets - Bond X

Money →

Repurchase agreement (repo)
Question 7

Bonds with a nominal value of R4 000 000 were sold by Bank XYZ to Bank AB on the 15th of October 2011 at an all in market price of R99, 500%. Ba **Errata** agreed to repurchase the bonds 7 days later at a repurchase rate of 7, 00%.
The consideration in the first leg of this transaction is ………

Consideration=nominal value of underlying instruments x AIP

AIP → Market price of bonds on date of **first** leg
Consideration = R4 000 000 x R99,500%
            = R4 000 000 x 0,995
            = R3 980 000   Correct answer
                              question 7: [2]

Repurchase agreement (repo)
Question 8

Bonds with a nominal value of R4 000 000 were sold by Bank XYZ to Bank AB on the 15th of October 2011 at an all in market price of R99, 500%. Bank XYZ agreed to repurchase the bonds 7 days later at a repurchase rate of 7, 00%.

What amount will be paid in the second leg of the transaction?

Consideration leg two = Interest payable +

Consideration leg one (C)

Repurchase transaction

(Questions 8)

Second leg of repo

Consideration leg two = Consideration leg one (N) +

Interest payable

Interest payable = N x i x n

N → consideration in leg one R3 980 000

i → repo rate 7,00% or 0,07

n → number of days between leg one and two /365 7/365

Interest payable = R3 980 000 x 0,07 x 7/365
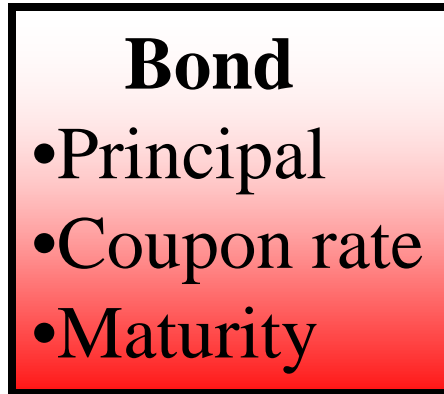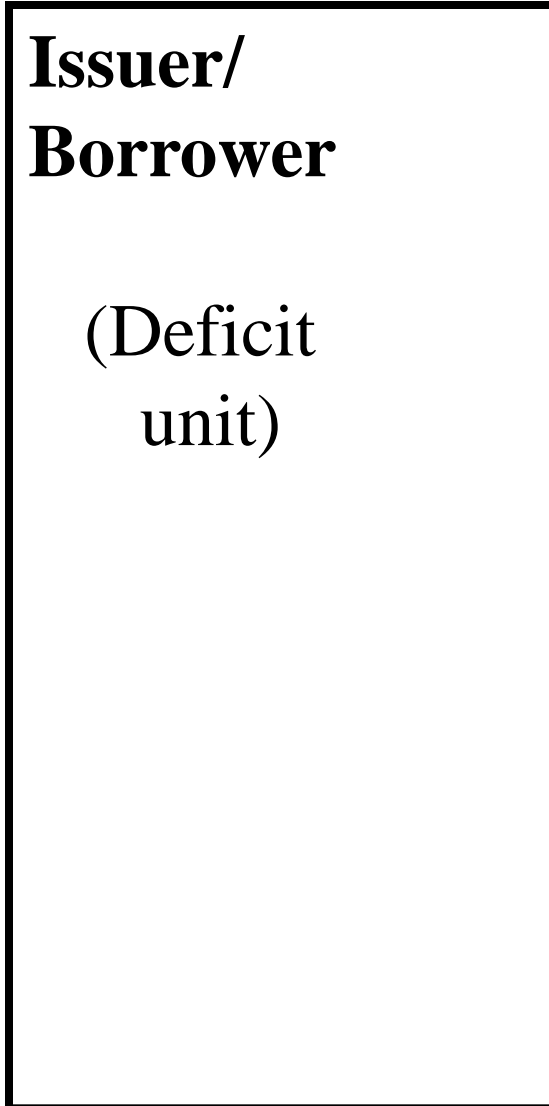
= R5 343

Correct answer
Question 8: [4]

Consideration in leg two = 3 980 000+ R:

= R3 985 343

The bond market

Bonds

**Issuer/
Borrower**

(Deficit
unit)

Bond
- Principal
- Coupon rate
- Maturity

Issue date

← **Money**

Bonds →

Coupon dates

Coupon →
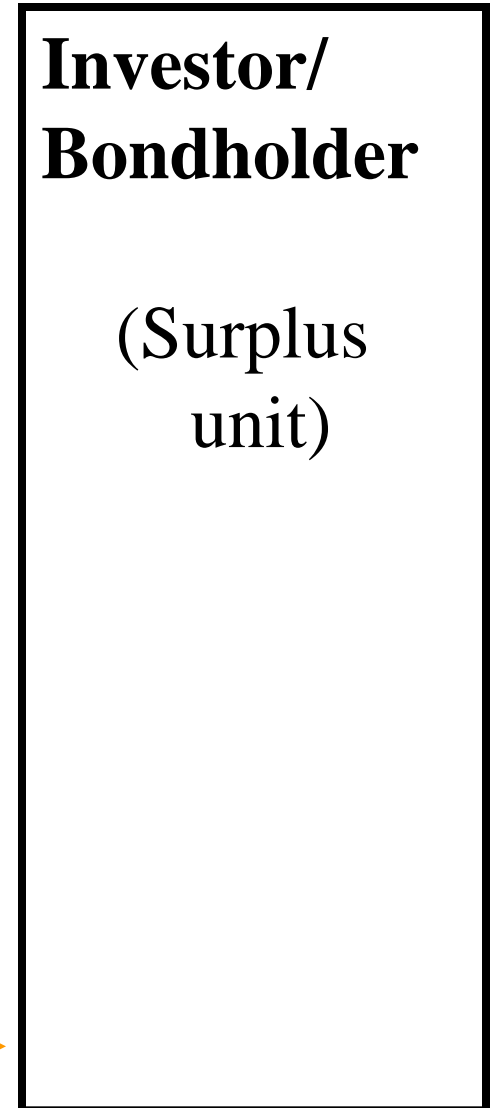
Expiry date

Principal →

**Investor/
Bondholder**

(Surplus
unit)

Bonds

Coupon payments

Coupon = coupon rate x principal

Eg Coupon rate = 0,10 x 10% p.a.

Principal = R10m

Coupon = 0,10 x R10m

= R1 000 000 per year

If coupon payments are twice a year:

Coupon = annual coupon / 2
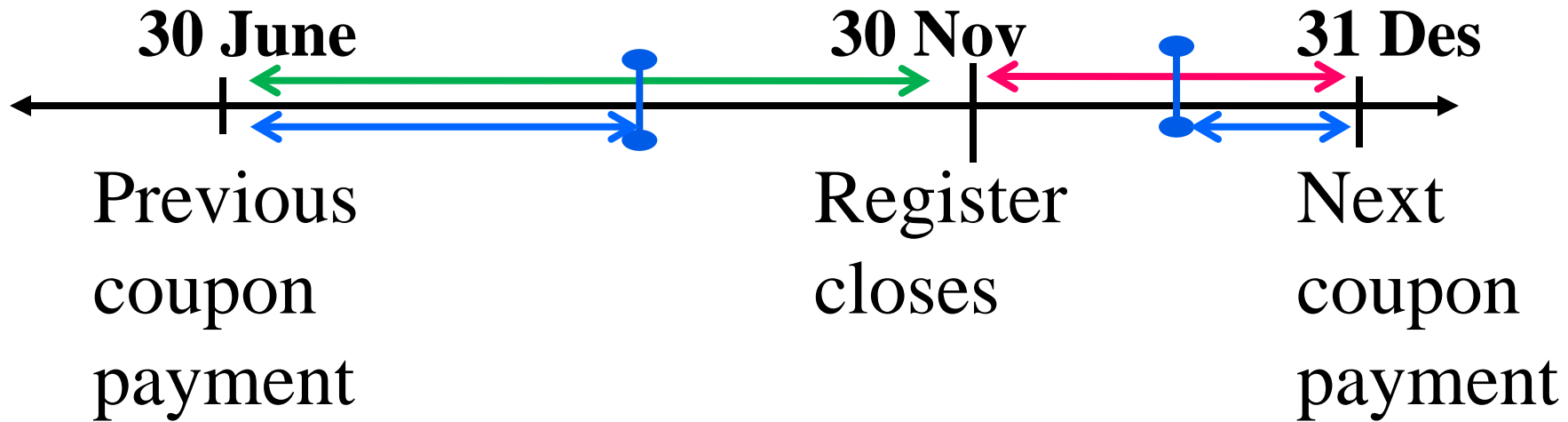
= R500 000 every six months

Bonds

Accrued interest

Bonds can trade cum interest or ex interest

Cum interest: interest has to be added to the clean price

Ex interest: interest has to be subtracted from the clean price

Bonds – When cum and when ex interest?

30 June   **30 Nov**   **31 Des**

Previous coupon payment

Register closes

Next coupon payment

From 30/6 to 30/11:
Bond belongs to buyer on register closing date.
Buyer will receive all interest
Seller must be refunded
Cum interest

From 30/11 to 31/12:
Bond belongs to seller on register closing date.
Seller will receive all interest
Buyer must be refunded
Ex interest

Bonds (Question 9)

	Bond A
Principal value:	R25million
Coupon rate:	5%
Issue date:	1 June 2000.
Maturity date:	31 May 2015
Coupon payment dates:	30 November and 31 May
Bond registers close a month before the coupon payment dates.	

Based on the information above and the fact that the bond's current market price is R101,500%, which of the following statements is/are correct?

(a) If on the 17th of February 2007 this bond was sold in the secondary market, it was trading ex interest.

(b)   If it was sold on the 29th of April 2007 in the secondary market, then it was traded cum interest.

Bonds (Question 9)

Bond A

Principal value: R25million

Coupon rate: 5%
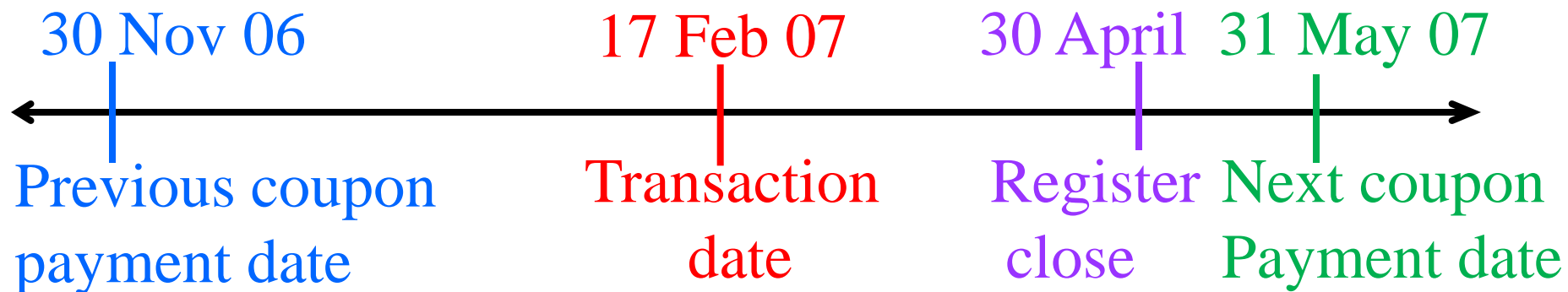
Issue date: 1 June 2000.

Maturity date: 31 May 2015

Coupon payment dates: 30 November and 31 May
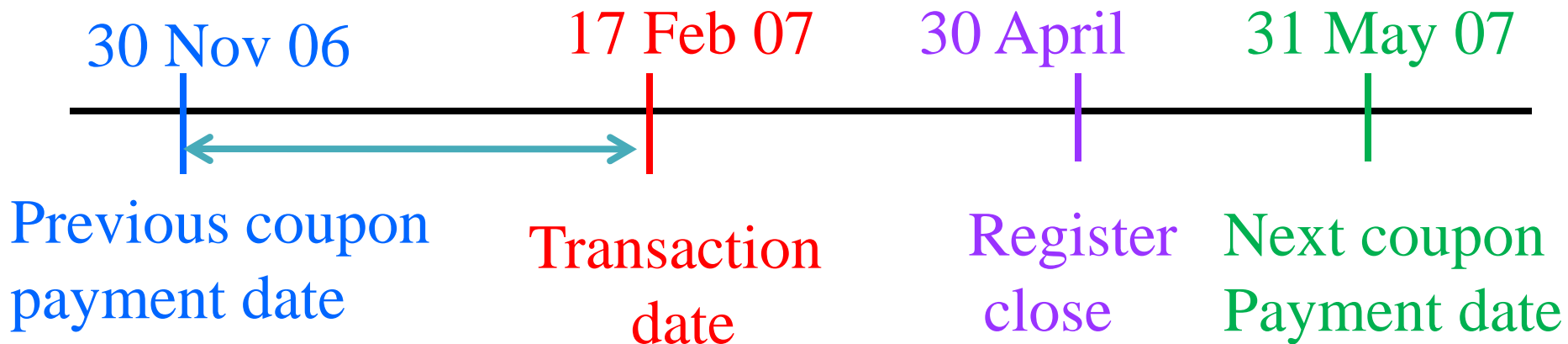
Bond registers close a month before the coupon payment dates.

Suppose that the bond traded on 17 February 2007

30 Nov 06 — 17 Feb 07 — 30 April — 31 May 07

Previous coupon payment date — Transaction date — Register close — Next coupon Payment date

Bonds (Question 9)

30 Nov 06   17 Feb 07   30 April   31 May 07

Previous coupon payment date   Transaction date   Register close   Next coupon Payment date

The party that holds the bond on the register closing date will receive the full coupon.

Who holds this bond on the register closing date?   The buyer

Who will receive the full coupon?   The buyer

But from 30 Nov 06 to 17 Feb 07 the bond belonged to the seller, so the seller has to be compensated for the period from 30 Nov 06 to 17 Feb 07.

Add accrued interest to clean price , thus cum interest

Statement (a) is not correct

Bonds (Question 9)

30 Nov 06   29 April   30 April   31 May 07

Previous coupon payment date   Transaction date   Register close   Next coupon Payment date

The party that holds the bond on the register closing date will receive the full coupon.

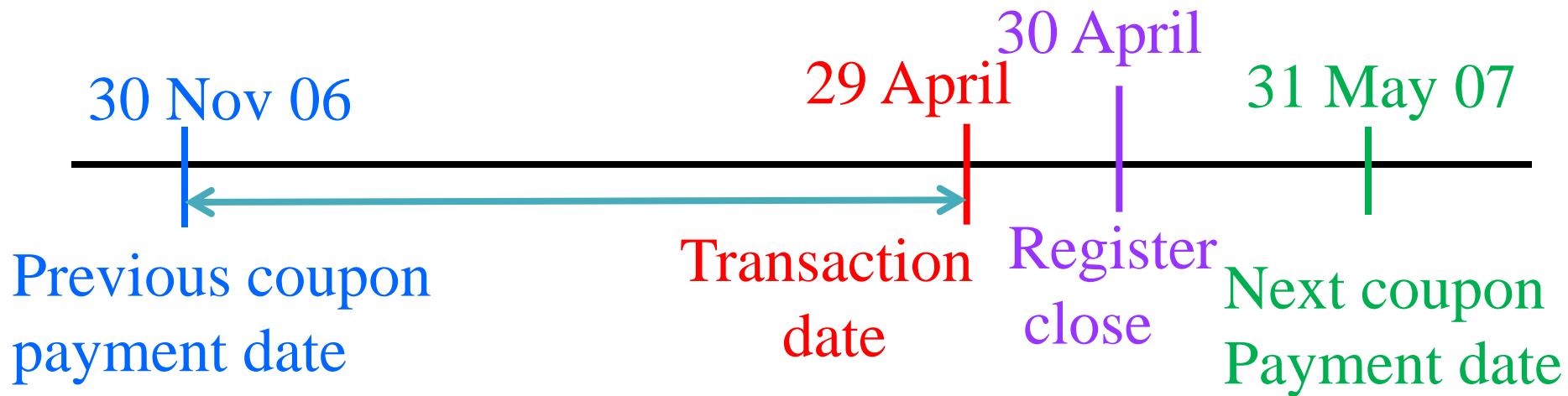Who holds this bond on the register closing date?   The buyer

Who will receive the full coupon?   The buyer

But from 30 Nov 06 to 29 April 07 the bond belonged to the seller, so the seller has to be compensated for the period from 30 Nov to 29 April 07

Add accrued interest to clean price , thus cum interest

Statement (b) is correct

Bonds

- Bonds are issue at a discount, at par or at a premium

  - **Discount:**   Price < R100% e.g. R95% or 0,95

  - **Par:**   Price = R100% i.e. R100% or 1,00

  - **Premium:**   Price > R100% e.g. R105% or 1,05

Bonds (Question 9)

Bond A	
Principal value:	R25million
Coupon rate:	5%
Issue date:	1 June 2000.
Maturity date:	31 May 2015
Coupon payment dates:	30 November and 31 May
Bond registers close a month before the coupon payment dates.	

Based on the information above and the fact that the bond's current market price is R101,500%, which of the following statements is/are correct?

(c) The bond is trading at a premium

(d) The bond is trading at par

R101,500% > R100%
Thus a premium
(c) is correct and
(d) is incorrect
Correct option [2]

Bonds (Question 10)

	Bond A
Principal value:	R25million
Coupon rate:	5%
Issue date:	1 June 2000.
Maturity date:	31 May 2015
Coupon payment dates:	30 November and 31 May

Bond registers close a month before the coupon payment dates.

Suppose the bond traded at a market price of R98.500% on 30 March 2008. The number of days from 30 November to 30 March is 120 and the number of days from 30 March to 31 May is 62. The accrued interest amount is......

First we have to decide whether the bond trades

cum interest or ex interest!

Bonds

Accrued interest

Bonds can trade cum interest or ex interest

Cum interest: interest has to be added
to the clean price

Ex interest: interest has to be subtracted
from the clean price

Bonds (Question 10)

Bond A

Principal value: R25million

Coupon rate: 5%

Issue date: 1 June 2000.
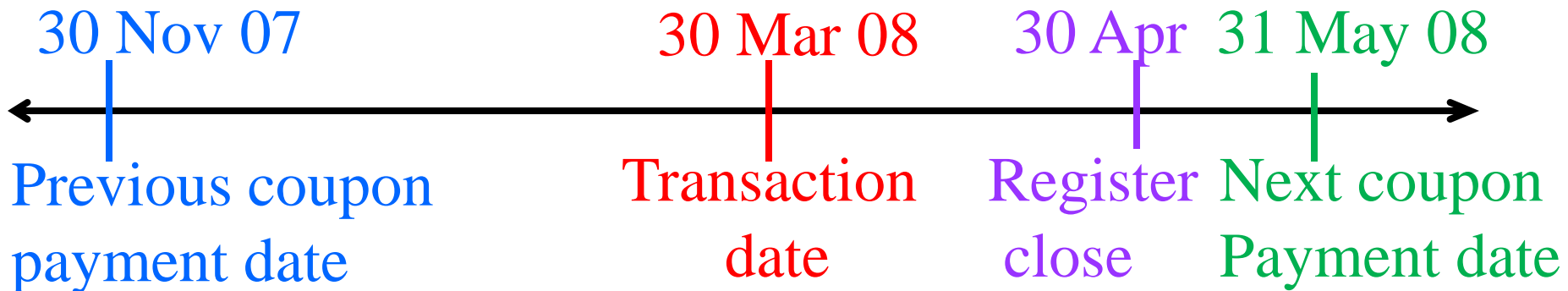
Maturity date: 31 May 2015
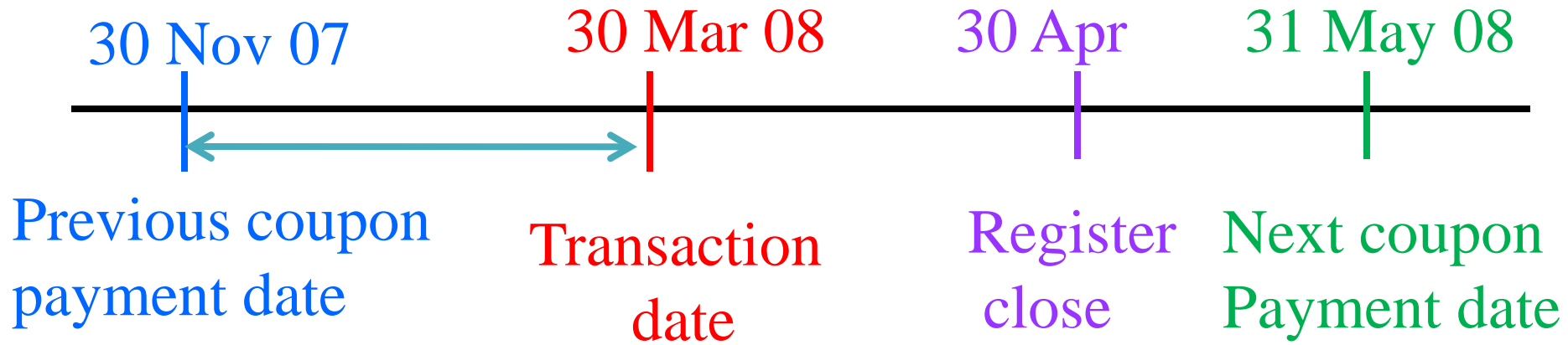
Coupon payment dates: 30 November and 31 May

Bond registers close a month before the coupon payment dates

Suppose the bond traded at a market price of R98.500% on 30 March 2008. The number of days from 30 November to 30 March is 120 and the number of days from 30 March to 31 May is 62. The accrued interest amount is......

30 Nov 07	30 Mar 08	30 Apr	31 May 08
Previous coupon payment date	Transaction date	Register close	Next coupon Payment date

Bonds (Question 10)

The party that holds the bond on the register closing date will receive the full coupon.

Who holds this bond on the register closing date? The buyer

Who will receive the full coupon? The buyer

But from 30 Nov 07 to 30 March 08 the bond belonged to the seller, so the seller has to be compensated for the period from 30 Nov to 30 March 08.
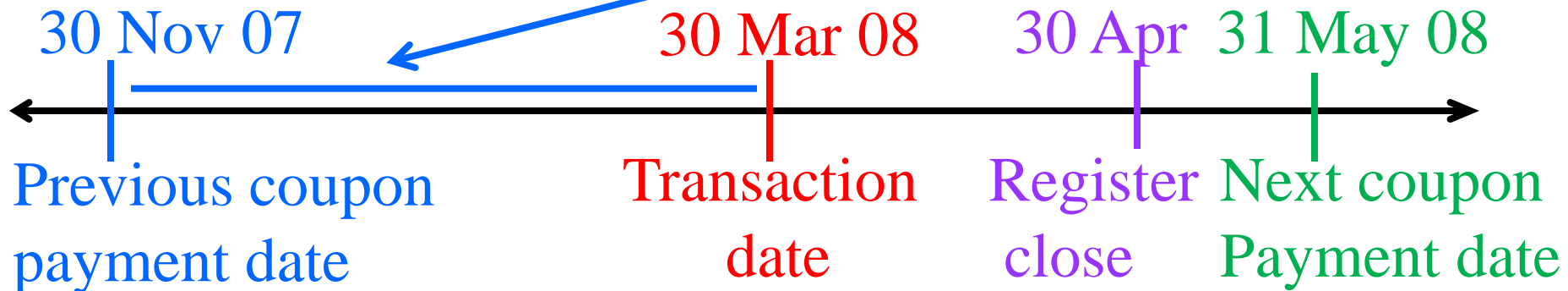
Add accrued interest to clean price , thus cum interest

Bonds (Question 10)

Bond A

Principal value: R25 million

Coupon rate: 5%

Issue date: 1 June 2000.

Maturity date: 31 May 2015

Coupon payment dates: 30 November and 31 May

Bond registers close a month before the coupon payment dates

Suppose the bond traded at a market price of R98.500% on 30 March 2008. The number of days from 30 November to 30 March is 120 and the number of days from 30 March to 31 May is 62. The accrued interest amount is......

30 Nov 07	30 Mar 08	30 Apr	31 May 08
Previous coupon payment date	Transaction date	Register close	Next coupon Payment date

Bonds (Question 10)

Bond A

Principal value: R25 million

Coupon rate: 5%

Issue date: 1 June 2000.

Maturity date: 31 May 2015

Coupon payment dates: 30 November and 31 May

Bond registers close a month before the coupon payment dates

Suppose the bond traded at a market price of R98.500% on 30 March 2008. The number of days from 30 November to 30 March is 120 and the number of days from 30 March to 31 May is 62. The accrued interest amount is......

Accrued interest amount = principal x coupon rate per annum x d/365

= R25 000 000 x 0,05 x 120/365

= R25 000 000 x 0,0164

= R410 959

Correct answer is [5].

Bonds (Question 11)

Bond A

Principal value: R25 million
Coupon rate: 5%
Issue date: 1 June 2000.
Maturity date: 31 May 2015
Coupon payment dates: 30 November and 31 May
Bond registers close a month before the coupon payment dates.

Suppose the bond traded at a market price of R98,500% on 30 March 2008. The number of days from 30 November to 30 March is 120 and the number of days from 30 March to 31 May is 6... ...he all in price was...........

Clean price amount = clean price x Principal
                    = 0,985 x R25m
                    = R24 625 000

All in price = clean price + accrued interest
             = R24 625 000 + R410 959   = R25 035 959

On 30 March bond traded **cum interest**, thus **add** accrued interest to clean price!

Bonds (Question 12)

Bond A

Principal value: R25million

Coupon rate: 5%

Issue date: 1 June 2000.

Maturity date: 31 May 2015

Coupon payment dates: 30 November and 31 May

Bond registers close a month before the coupon payment dates.

Suppose that the bond now traded at a market price of R99, 00% on 10 May 2009. The number of days from 30 November to 10 May is 161 and the number ~~of~~ **4 things to do:** 1. On that date, the all in price was~~~~

1. Does it trade ex interest or cum interest
2. Calculate accrued interest
3. Calculate clean price
4. Calculate all-in price

Bonds (Question 12)

Bond A

Principal value: R25million

Coupon rate: 5%

Issue date: 1 June 2000.

Maturity date: 31 May 2015

Coupon payment dates: 30 November and 31 May

Bond registers close a month before the coupon payment dates.

Suppose that the bond now traded at a market price of R99, 00% on 10 May 2009. The number of days from 30 November to 10 May is 161 and the number of days from 10 May to 31 May is 21. On that date, the

all in price was...........

1. Does it trade ex interest or cum interest?

30 Nov 08   **30 Apr 09** **10 May** 31 May09

Bonds (Question 12)

30 Nov 08

30 Apr

10 May

31 May 07

Register close

Previous coupon
payment date

Transaction
date

Next coupon
Payment date

**The party that holds the bond on the register closing date will
receive the full coupon.**

Who holds this bond on the register closing date?   The seller

Who will receive the full coupon?   The seller

But from 10 May 09 to 31 May 09 the bond belonged to the buyer, so the
buyer has to be compensated for the period from 10 May 09 to 31 May
09 .

Subtract accrued interest from clean price , thus ex interest

Bonds (Question 12)

Bond A

Principal value: R25million

Coupon rate: 5%

Issue date: 1 June 2000.

Maturity date: 31 May 2015

Coupon payment dates: 30 November and 31 May

Bond registers close a month before the coupon payment dates.

Suppose that the bond now traded at a market price of R99, 00% on 10 May 2009. ~~The number of days from 30 November to 10 May is 161 and the number~~ **4 things to do:** ~~1. On that date, the~~ all in price ~~was~~

1. Does it trade ex interest or cum interest √

2. Calculate accrued interest

3. Calculate clean price

4. Calculate all-in price

Bonds (Question 12)

Bond A

Principal value:	R25million
Coupon rate:	5%
Issue date:	1 June 2000.
Maturity date:	31 May 2015
Coupon payment dates:	30 November and 31 May

Bond registers close a month before the coupon payment dates.

Suppose that the bond now traded at a market price of R99, 00% on 10 May 2009. The number of days from 30 November to 10 May is 161 and the number of days from 10 May to 31 May is 21. On that date, the all in price was...........

Accrued interest amount = principal x coupon rate per annum x d/365

$\qquad$ = R25 000 000 x 0,05 x 21/365

$\qquad$ = R25 000 000 x 0,0029

$\qquad$ = R71 918

Bonds (Question 12)

	Bond A
Principal value:	R25million
Coupon rate:	5%
Issue date:	1 June 2000.
Maturity date:	31 May 2015
Coupon payment dates:	30 November and 31 May
Bond registers close a month before the coupon payment dates.	

Suppose that the bond now traded at a market price of R99, 00% on 10 May 2009. The number of days from 30 November to 10 May is 161 and the number ~~of~~ ...1. On that date, the all in price w~~as~~.........

4 things to do:

1. Does it trade ex interest or cum interest √
2. Calculate accrued interest √
3. Calculate clean price
4. Calculate all-in price

Bonds (Question 12)

Bond A

Principal value:	R25 million
Coupon rate:	5%
Issue date:	1 June 2000.
Maturity date:	31 May 2015
Coupon payment dates:	30 November and 31 May

Bond registers close a month before the coupon payment dates.

Suppose that the bond now traded at a market price of R99, 00% on 10 May 2009. The number of days from 30 November to 10 May is 161 and the number of days from 10 May to 31 May is 21. On that date, the all in price was...........

Clean price amount = clean price x Principal

= 0,99 x R25m

= R24 750 000

Bonds (Question 12)

Bond A

Principal value: R25million
Coupon rate: 5%
Issue date: 1 June 2000.
Maturity date: 31 May 2015
Coupon payment dates: 30 November and 31 May
Bond registers close a month before the coupon payment dates.

Suppose that the bond now traded at a market price of R99, 00% on 10 May 2009. The number of days from 30 November to 10 May is 161 and the number ~~of~~ ~~days~~ 1. On that date, the all in price ~~was~~

4 things to do:

1. Does it trade ex interest or cum interest √

2. Calculate accrued interest √

3. Calculate clean price √

4. Calculate all-in price

Bonds (Question 12)

Bond A

Principal value: R25 million

Coupon rate: 5%

Issue date: 1 June 2000.

Maturity date: 31 May 2015

Coupon payment dates: 30 November and 31 May

Bond registers close a month before the coupon payment dates.

Suppose that the bond now traded at a market price of R99, 00% on 10 May 2009. The number of days from 30 November to 10 May is 161 and the number of days from 10 May to 31 May is ~~2...~~ price was...........

Clean price amount = clean price x Principal

$\qquad$ = 0,99 x R25m

$\qquad$ = R24 750 000

All in price = clean price - accrued interest

$\qquad$ = R24 750 000 - R71 918

On 10 May bond traded **ex interest**, thus **subtract** accrued interest from clean price!

= R24 678 082

ARE YOU STILL WITH US?

Foreign exchange market
Question 13 of Assignment 02

If a foreign exchange dealer quotes a price of GBP/BWP 11,450/ 12, 150 and the client wishes to buy GBP3 million and sell BWP, how much BWP does the client have to pay?

Dealer buys GBP: 1 GBP = 11,450 BWP

Dealer sells GBP: 1 GBP = 12, 150 BWP

Client buys GBP, thus dealer must sell GBP

$\qquad$ 1 GBP = 12, 150 BWP

Thus 3m GBP = 12, 150 x 3m BWP

$\qquad$ = 36 450 000 BWP   Thus correct alternative is [1]

Foreign exchange market

If a foreign exchange dealer quotes a price of USD/NGN 150.75 / 155.90 and the client wishes to buy 200 million Nigerian Naira and sell USD, how much USD does the client have to pay?

Dealer buys USD : 1 USD = 150.75 NGN

Dealer sells USD : 1 USD = 155.90 NGN

Client sells USD , thus dealer buy USD

$$1 \text{ USD} = 150{,}75 \text{ NGN}$$

$$1/150{,}75 \text{ USD} = 1 \text{ NGN}$$

$$1/150{,}75 \times 200 \text{ million USD} = 200 \text{ million NGN}$$

$$1\,326\,700 \text{ USD} = 200 \text{ million NGN}$$

Thus correct alternative is [4]

Options

Question 15 of Assignment 02

It will be profitable to exercise an option when………..

- it is in the money

- i.e. when the holder can gain from exercising it

Options

What is an option?

<u>Put option</u>

Right to **sell** at a strike price

Want to sell at highest possible price,

Thus when strike price > market price
       option is **in** the money

When strike price < market price
      option is **out** of the money

When strike price = market price
      option is **at** the money

Example

Strike price is R100

Market price = R95

R100 > R95

sell at strike price

Market price = R105

R 100<R105

Sell at market price

Market price = R100

R100 = R100

Indifferent

Options

What is an option?

<u>Call option</u>

Right to **buy** at a strike price

Want to buy at lowest possible price,

Thus when strike price > market price
option is **out** of the money

When strike price < market price
option is **in** the money

When strike price = market price
option is **at** the money

Example

Strike price is R100

Market price = R95

R100 > R95

Buy at market price

Market price = R105

R 100<R105

Buy at strike price

Market price = R100

R100 = R100

Indifferent

Options
Question 15 of Assignment 02

It is **not** profitable to exercise an option when…………

[1] the <u>call </u>option exercise (strike) price is greater than the market price of the underlying asset. √

Option to buy (at lowest price possible)

Strike price > market price

Rather buy at market price

Thus option is **out of** the money – not profitable

Options
Question 15 of Assignment 02

It is **not** profitable to exercise an option when………..

[2] the <u>call</u> option exercise price is less than the
market price of the underlying asset. **X**

Option to buy (at lowest price possible)

Strike price < market price

Rather buy at strike price

Thus option is **in** the money –profitable

Options

It is **not** profitable to exercise an option when………..

[3] the <u>put </u>option exercise price is greater than the market price of the underlying asset.   **X**

Option to sell (at highest price possible)

Strike price > market price

Rather sell at strike price

Thus option is **in** the money –profitable

Options
Question 15 of Assignment 02

It is **not** profitable to exercise an option when………..

[4] the <u>call</u> option exercise price is equal to the market price of the underlying asset.

Option to sell (at highest price possible)

Strike price = market price

Will break even

The end

- All the best with the exam! Be well prepared!
- Please complete the evaluation form