

# TREASURY MANAGEMENT 2

## ANSWER SHEET

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(a) (i)  $\text{Total cost} = \text{Amount in ZAR} \times \text{Offer rate}$

$$= 2m \times 58.30$$

$$= K116,600,000.00$$

(ii) Discount converted into Kwacha at the Ask/Bid/Buy Rate

$$= \text{Discount in ZAR} \times \text{Ask rate}$$

$$= 18,000 \times 55.25$$

$$= K994,500.00$$

Fr. ...

...

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$$= \text{Spot rate} \times \frac{\left[ \left( \frac{\text{Variable currency}}{\text{Interest rate}} \times \frac{\text{days}}{\text{day base}} \right) - \left( \frac{\text{Base currency}}{\text{Interest rate}} \times \frac{\text{days}}{\text{day base}} \right) \right]}{\left[ 1 + \left( \frac{\text{base currency}}{\text{Interest rate}} \times \frac{\text{days}}{\text{day base}} \right) \right]}$$

$$= 718 \times \frac{\left[ \left( \frac{12.0}{100} \times \frac{31}{365} \right) - \left( \frac{3.0}{100} \times \frac{31}{360} \right) \right]}{\left[ 1 + \left( \frac{3.0}{100} \times \frac{31}{360} \right) \right]}$$

$$= 718 \times \frac{[(0.0102) - (0.0026)]}{[1 + 0.0026]}$$

$$= 718 \times \left( \frac{0.0076}{1.0026} \right)$$

$$= 718 \times 5.44$$

$$= 772 \dots$$

# ANSWERS

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2 (a) Calculating Forward Rates

(i) EUR/USD Forward Rate

$$= (1.0770 - 1.0765) / (1.0780 - 1.0760)$$

$$= 1.0705 / 1.0720$$

(ii) EUR/CAD Forward Rate

$$= (1.3450 + 1.3430) / (1.3455 + 1.3435)$$

$$= 1.3480 / 1.3490$$

(b) EUR/USD 1 month Forward =  $1.0705 / 1.0720$

USD / CAD 1 month Forward =  $1.3480 / 1.3490$

using "Multiply down" method, we get:

$$\text{EUR/CAD} = (1.0705 \times 1.3480) / (1.0720 \times 1.3490)$$

$$= 1.4430 / 1.4461$$

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(c) First calculate the cross spot rate for EUR/CAD

$$\text{EUR/USD} = 1.0770 / 1.0780$$

$$\text{USD/CAD} = 1.3450 / 1.3455$$

"Multiply down"

$$\begin{aligned} \text{EUR/CAD} &= \frac{(1.0770 \times 1.3450)}{(1.0780 \times 1.3455)} \\ &= 1.4486 / 1.4504 \end{aligned}$$

EUR/CAD Swap points  $\Rightarrow$

$$\text{Forward Rate} = 1.4430 / 1.4461$$

$$\text{Spot Rate} = 1.4486 / 1.4504$$

$$\text{Swap points} = -0.0056 / -0.0043$$

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(a) (i) Lever Brothers could buy Euros from Barclays at the offer price <sup>of 0.640</sup> and sell to ABN AMRO at the bid price of 0.645. Lever Brothers would thus benefit from the differential exchange rates between the two banks. (4 marks)

$$(ii) \Rightarrow \text{Buy EUR from Barclays at } 0.640 \\ = \frac{500,000}{0.640} = 781,250$$

$$\text{Sell EUR to ABN AMRO at } 0.645$$

$$= 781,250 \times 0.645$$

$$= 503,906.25$$

$$\text{Profit made} = \text{USD } 503,906.25 \\ - \text{USD } 500,000.00$$



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(a) (iii) Arbitrage Gain/Loss

(b) Due to high demand of Euros at Bar days, a shortage of Euros may soon occur there. As a result the bank may raise its offer price of Euros. At the same time, excess supply of Euros at ABN AMRO will force the bank to lower its bid price. This realignment will occur until there is no arbitrage opportunity left.

4 (a) Number of days from  
05/04/17 to 20/09/17

April 25 days

May 31 days

June 30 days

July 31 days

August 31 days

September 20 days

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(b) clean Price = 107.45

$$\text{Accrued Interest} = 12 \times \frac{168}{365}$$

$$= 5.52$$

(c) Dirty Price = clean Price +  
Accrued Interest

$$= 107.45 + 5.52$$

$$= 112.97$$

(d) Total cost =  $50,000,000 \times \frac{112.97}{100}$

$$= 56,485,000.00$$

(5)(a) Forward Forward Rate

$$= \left[ \frac{1 + \frac{\text{Interest rate long period} \times \text{day count long period}}{\text{annual basis}}}{1 + \frac{\text{Interest rate short period} \times \text{day count short period}}{\text{annual basis}}} \right] - 1$$

... 0 basis

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$$= \left[ \frac{1 + \frac{0.25 \times 547}{365} - 1}{1 + \frac{0.12 \times 273}{365}} \right] \times \frac{365}{547 - 273}$$

$$= \left( \frac{1 + 0.37}{1 + 0.09} - 1 \right) \times 1.33$$

$$= \left( \frac{1.37}{1.09} - 1 \right) \times 1.33$$

$$= 0.26 \times 1.33$$

$$= 0.35 \times 100$$

$$= 35\%$$



5 (b)

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$$\begin{aligned}
 \text{Purchase Price} &= \frac{\text{Value of Collateral}}{1 + \text{haircut \%age}} \\
 &= \frac{100,000,000}{1 + 0.075} \\
 &= \frac{100,000,000}{1.075} \\
 &= \text{K}93,023,255.80
 \end{aligned}$$

6. (a) Secondary market proceeds:

$$\begin{aligned}
 &= 1,000,000,000 \times \left( 1 - \frac{0.18 \times (62 - 30)}{365} \right) \\
 &= 1,000,000,000 \times \left( 1 - \frac{0.18 \times 32}{365} \right) \\
 &= 1,000,000,000 \times (1 - 0.016) \\
 &= 1,000,000,000 \times 0.984 \\
 &= \text{K}984,000,000.00
 \end{aligned}$$

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Purchase Price

$$\begin{aligned}
 6(b)(i) &= 100,000,000 \times \left(1 - \frac{0.15 \times 182}{365}\right) \\
 &= 100,000,000 \times (1 - 0.075) \\
 &= 100,000,000 \times 0.925 \\
 &= K92,500,000.00
 \end{aligned}$$

(ii) Secondary mkt proceeds

$$= \frac{\text{face Value}}{1 + \frac{\text{yield} \times \text{day count}}{\text{annual basis}}}$$

$$= \frac{100,000,000}{1 + \frac{0.12 \times 131}{365}}$$

$$= \frac{100,000,000}{1 + 0.043}$$

$$= \frac{100,000,000}{1.043} = K95,877,277.10$$

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6 (b) (iii)

$$\text{Yield} = \frac{\text{rate of discount}}{1 - \frac{\text{rate of discount} \times \text{day count}}{\text{annual basis}}}$$

$$= \frac{0.1255}{1 - \frac{0.1255 \times 91}{365}}$$

$$= \frac{0.1255}{1 - 0.03}$$

$$= \frac{0.1255}{0.97}$$

$$= 0.129 \times 100$$

$$= 12.9 \%$$