UNIVERSITI TEKNOLOGI MARA

UiTM di hatiku

BANK DISCOUNT & PROMISSORY NOTE

Prepared by:
Mathematical Science Department

LEARNING OUTCOMES

By the end of this chapter, student should be able to

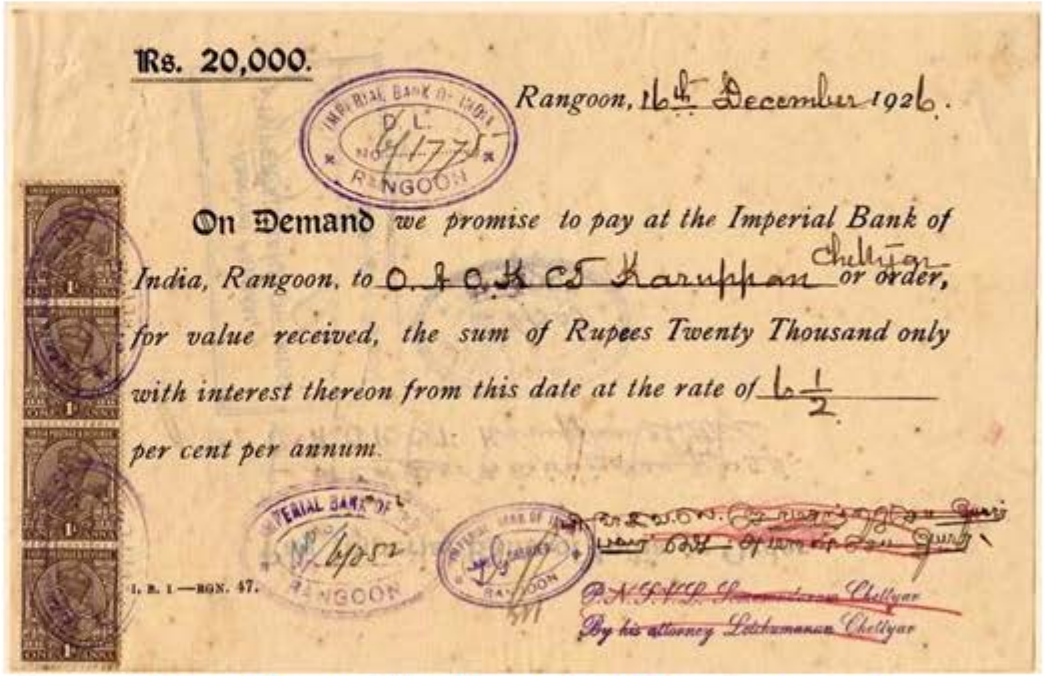
- explain the meaning of a promissory note,
- list the main features of a promissory note,
- compute the face and maturity values of a promissory note,
- explain the meaning of bank discount,
- compute the bank discount and proceeds, and
- compute simple interest rate that is equivalent to discount rate.

PROMISSORY NOTE

Definition:

A signed document containing a written promise to pay a sum of money at specified date with or without interest.

There note can be with or without interest. In this course, the interest bearing note will be calculated as simple interest using Banker's Rule.


Rs. 20,000.

Rangoon, 16th December 1926.

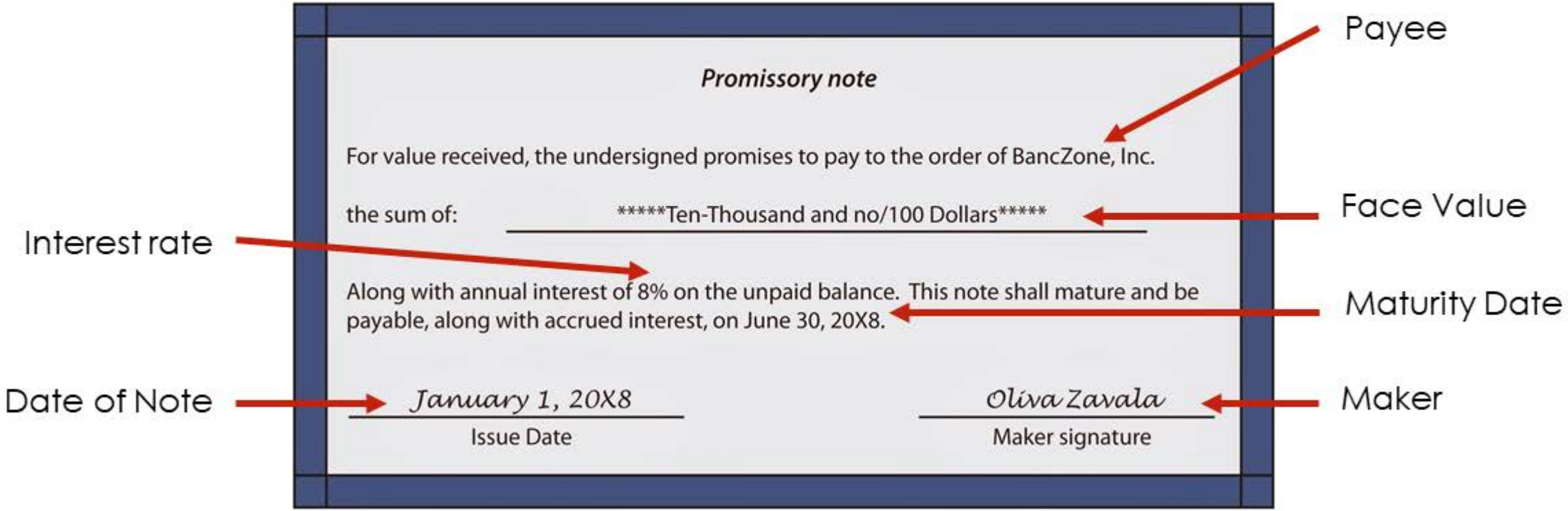
On Demand we promise to pay at the Imperial Bank of India, Rangoon, to O.K.C.T. Karuppan Chettyar or order, for value received, the sum of Rupees Twenty Thousand only with interest thereon from this date at the rate of 6 1/2 per cent per annum.

Source: https://en.m.wikipedia.org/wiki/promissory_note.
A 1926 promissory note from the Imperial Bank of India, Rangoon, Burma for 20,000 rupees plus interest

FEATURES ON PROMISSORY NOTE

- Maker : The name of person that sign the note (debtor)
- Payee : The name of person that receive the note (creditor)
- Face Value : The amount stated on the note or the amount borrowed
- Date Issue : The date of the note is signed
- Time (Term) : The length of period (must have if maturity date not stated)
- Interest rate : the rate charge for interest bearing note (simple interest)
- Maturity Date : The date the debt must be paid (optional)
- Maturity Value : The amount has to be paid including interest (optional)

FEATURES ON PROMISSORY NOTE



Source: https://nazarsudhakar.blogspot.com/2014/02/promissory-note-details.html

How to find the maturity value for interest bearing note?

In most situation, for an interest bearing note, the maturity value is not stated on the note. For this situation, the maturity value can be calculated using the simple interest amount formula, i.e.,

$$S = P(1 + rt)$$

Note: *only simple interest using Banker's Rule will be used in this lesson.*

Example 1

Find the maturity value and the maturity date for a 75 days promissory note with face value RM 3,300 at 5% simple interest issued on the 12 Jun 2014.

i) P = 3300; r = 0.05; t = 75/360

$$S = P(1+rt)$$

$$= 3300\left(1+0.05\left(\frac{75}{360}\right)\right)$$

$$= \text{RM}3334.38$$

ii)

$$\text{12 Jun 2014} \quad (30-12) = 18 \rightarrow 57 \quad (75)$$

$$\text{Jul} \qquad\qquad = 31 \rightarrow 26$$

$$\text{Maturity Date} = 26 \text{ Aug } 2014$$

Example 2

A 180-day promissory note dated 8 June 2012 had a face value of RM2000. The simple interest rate charged was 6.6% per annum. Determine

i) the maturity date of the note

ii) the maturity value

SOLUTION

i)

		180
8 Jun 2012	$(30 - 8) = 22 \rightarrow$	158
Jul	$= 31 \rightarrow$	127
Aug	$= 31 \rightarrow$	96
Sep	$= 30 \rightarrow$	66
Oct	$= 31 \rightarrow$	35
Nov	$= 30 \rightarrow$	5

Maturity Date = 5 Dec 2012

$$ii)\ S = P(1 + rt)$$

$$= 2000\left(1 + 0.066\left(\frac{180}{360}\right)\right)$$

$$= \text{RM}2066$$

BANK DISCOUNT

- It is a common practice by the bank to deduct ***charges from a loan in advance***. This charges is called ***bank discount***.
- The ***money left receives by the borrower*** is called ***proceeds***.
- The maturity value is the value of the ***money actually borrowed***.
- **Maturity value = Proceeds + Bank Discount.**
- ***It is different from the case of simple interest where the amount of maturity value is more than the amount borrowed.***

To calculate the Bank Discount and Proceeds, we will use the following formula:

$$D = Sdt$$

where, D = Bank discount

d = discount rate

t = term of discount in years.

and,

Proceeds, H = Maturity value – Bank discount

$$H = S - D$$

$$H = S - Sdt$$

$$H = S(1 - dt)$$

INTEREST RATE EQUIVALENT TO DISCOUNT RATE.

Some times, bank charged for their service with simple interest rate in mind. So, they will find the *equivalent discount* (service charge) rate to the intended simple interest rate that they want to obtain. Below are the two formulas that can be used to calculate these rates.

❶ $$r = \frac{d}{1 - dt}$$

❷ $$d = \frac{r}{1 + rt}$$

Example 3

RM2000 was borrowed for 72 days at a discount rate of 8.75%. Determine

i) the amount received and the discount charged

ii) the simple interest rate that is equivalent to the given discount rate

SOLUTION

$$i)\ S = 2000; d = 0.0875; t = \frac{72}{360}$$

$$H = S(1 - dt)$$

$$= 2000\left(1 - 0.0875\left(\frac{72}{360}\right)\right)$$

$$= RM1965$$

$$D = S - H$$

$$= 2000 - 1965$$

$$= \text{RM}35$$

$$ii)\ r = \frac{d}{1 - dt}$$

$$= \frac{0.0875}{1 - 0.0875\left(\frac{72}{360}\right)}$$

$$= 0.0891\ @8.91\%$$

Exercise

A loan of RM7,000 was made on 15 October 2012 at xYz Bank that charged a simple discount rate of d%. The discount charged was RM205 and the loan matured on 11 November 2012.

Find

i) the proceeds received,

ii) the discount period and the discount rate.

Try this question and check your work with your instructor.

Answers:
H=RM6795
Term=27 days
d= 39.05%

END OF LEARNING SLIDES
HOPE YOU HAVE MASTER THE MATERIALS COVERED
GOOD LUCK & ALL THE BEST