NATIONAL UNIVERSITY OF SINGAPORE

GEK2013 – REAL ESTATE FINANCE

(Semester II: AY2012-13)

Time Allowed: 2 Hours 30 Minutes

INSTRUCTIONS TO CANDIDATES

1. This examination paper contains **THREE** questions and comprises **FOUR** printed pages.
2. Answer **ALL** questions.
3. The marks for each question are shown in brackets and add up to 100.
4. This is an **OPEN BOOK** examination.
5. The examiner for this module is Associate Professor Lum Sau Kim.

SECTION I – Answer ALL questions (82 MARKS)

QUESTION 1 – LOAN CONTRACTS (24 marks)

A mortgage lender believes that mortgage rates (as measured by a published index) will remain constant at 9% for the next two years and then jump to 9.5% and remain there indefinitely. The lender would like to create two mortgage contracts that would provide the same yield to the lender over the life of the loan if rates move as predicted.

Loan A is a standard adjustable-rate mortgage [ARM] with a variable interest rate and the borrower's monthly payments would adjust each time the interest rate changes to fully amortize the loan over the original contract maturity.

Loan B would also have a variable interest rate but would keep the monthly payment the same and extend (or shorten) the maturity period when rates rose (or fell).

Assume the mortgage is for $100,000 and it is originated with a maturity of 30 years and at an original rate of 9%. The rate on both loans adjusts with the index. Assume that prepayment is not allowed.

a) If interest rates move as expected by the lender, calculate the IRR earned by the lender if Loan A is held to maturity.

(6 marks)

b) Under the same assumption about interest rates, what is the maturity period for Loan B after the change in interest rates at the end of year two?

(6 marks)

c) Should the lender be indifferent between the two loans?

(6 marks)

d) What problems might the lender and borrower encounter with Loan B if interest rates do not move as predicted?

(6 marks)

<u>QUESTION 2 – REFINANCE (58 marks)</u>

Mr and Mrs Lee, a couple both aged 45 this year, approach you for financial advice. The Lees purchased a condominium in the Bukit Timah area for $1 million four years ago and took out an adjustable-rate mortgage [ARM] for 25 years from a local bank, Bank AA, in the amount of $600,000. The ARM offered a teaser rate of 2% p.a. for the first three years. The rate was revised to 3% p.a. last year. They withdrew $200,000 from Mr. Lee's CPF Ordinary Account to purchase the unit. At that time, Mr. Lee was drawing a monthly salary of $8,000. He utilized $1,000 from his monthly CPF Ordinary Account contributions to service the mortgage. Mrs. Lee is a full-time housewife and looks after their three children aged 17, 9 and 7 years old.

A year ago, Mr. Lee lost his job and had to draw down on his CPF Ordinary Account to service the mortgage. Please assume that Mr Lee was allowed to do so. Now, Mr. Lee has managed to find another job that pays only $5,000 per month. He is worried that he may not be able to afford paying their mortgage obligations.

Based on the case notes, answer the following questions. Clearly state and explain any assumptions you may make.

Advise the Lees on the following:

a) What is the mortgage balance on their original loan?

(8 marks)

b) If they sold their condominium unit today, what is the amount that must be refunded to their CPF Ordinary Account? Assume that the CPF interest rate on an annual basis for the past four years was a fixed 2.5% and that the compounding basis was annual. Assume also that Mr. Lee's salary from his previous job remained unchanged until a year ago when he was retrenched.

(6 marks)

c) Compute the current monthly CPF contributions from the new job that can be used for servicing the housing loan.

(6 marks)

d) Assume that the mortgage rate stays at 3% p.a. Mr. Lee has $18,620 in his CPF Ordinary Account. How long can he continue to pay for the mortgage if he does not top-up his debt service in cash? You need to assume that he will use up the balance in the Ordinary Account, in addition to the current monthly CPF contributions, to service the monthly debt payments if he is not paying anything in cash.

(6 marks)

e) What can Mr. and Mrs. Lee do after they have exhausted their Ordinary Account balance?

(6 marks)

The Lees wonder if they should refinance their existing mortgage. They came across an offer for a new loan from Bank BB that would charge 1.8% p.a. for the first two years and 2.8% p.a. from the third year onwards. The loan duration is for 21 years. Bank AA charges a 2% prepayment penalty if the mortgage is prepaid within the first 5 years. Bank BB imposes no loan fee but would require a prepayment penalty of 2% if the loan is prepaid within the first five years.

f) Advise the Lees if they should prepay the first loan and refinance with Bank BB. The Lees would want to borrow the prepayment penalty amount as well.

(10 marks)

When the Lees spoke with Bank AA about their situation, they were offered a refinancing package that would waive the prepayment penalty altogether. The new loan would be for a period of 21 years at 1.9% for the first two years and 2% thereafter.

g) Advise the Lees if they should accept Bank AA's offer instead of Bank BB's package.

(10 marks)

h) Would you recommend any other changes to the loan offer(s) that would be beneficial to the Lees?

(6 marks)

SECTION II - Choose **ONE** of the following TWO questions. **(18 marks)**

QUESTION 3

State the key types of default risk in housing loans. What features in a mortgage can help a lender minimize default risk?

QUESTION 4

State whether you agree or disagree with the statement below and why.

"Given the current interest rate scenario, borrowers should prepay their mortgages every three years and shop for another home loan to profit from the "promotional or teaser" rates."

END OF PAPER