DEBT SECURITIES (FIN5DBS) – SEMESTER 1, 2012

TUTORAL ASSESSMENT TASK 5A – VALUING BONDS WITH EMBEDDED OPTIONS AND MORTGAGE-BACKED SECURITIES

Question 1)
The callable bonds of White Rabbit Enterprises Limited have a positive option-adjusted spread (OAS) of 280 basis points relative to Australian Government bonds of the same maturity. Comparable bonds to those of White Rabbit Enterprises Limited, with identical credit risk and maturity terms, are trading at an average nominal spread to the Australian Government bond of 250 basis points. This suggests the following about the White Rabbit Enterprises Limited bonds:

a) They are currently overpriced (or rich) in the market
b) They are currently fairly-priced in the market
c) They are currently underpriced (or cheap) in the market
d) They are less risky that Australian Government bonds.

Question 2)
The following table outlines the collateral pool backing a mortgage passthrough security. The loans forming the collateral pool were all originally issued with 360 month maturity terms.

Loan	Outstanding balance	Mortgage rate	Months remaining
BA1	$650,000	6.70%	260
CL4	$450,000	7.30%	245
DG6	$500,000	7.00%	270
FJ3	$400,000	7.50%	230

The weighted average maturity (WAM) for this mortgage passthrough security is currently (rounded to the closest whole month):

a) 360 months
b) 260 months
c) 253 months
d) 244 months

Question 3)
The weighted average coupon rate (WAC) for the mortgage passthrough security in Question 2 is 7.07% per annum. If the current traded price of the passthrough security reflects a passthrough rate of 6.35% per annum being provided to investors, the monthly servicing fee associated with the mortgage passthrough security is:

a) 0.529%
b) 0.720%
c) 0.589%
d) 0.060%

Question 4)
A decrease in interest rate volatility will:

a) decrease the value of both callable and putable bonds
b) increase the value of both callable and putable bonds
c) decrease the value of a callable bond and increase the value of a putable bond
d) increase the value of a callable bond and decrease the value of a putable bond.

Question 5)
An arbitrage-free binomial interest rate tree provides a value for a putable bond issued by the Crust Company of $104.60. If an equivalent option-free bond issued by the company is currently trading at $101.85, the value of the put option associated with the putable bond is:

a) $0.00
b) $2.75
c) $1.80
d) $2.20

Question 6)
The average life of a mortgage passthrough security is a preferred indicator of interest rate risk compared to the weighted average maturity (WAM) of a passthrough security because:

a) it incorporates the default risk associated with the underlying collateral pool
b) it contains a convexity adjustment to the interest rate risk measure
c) it incorporates the effect of principal prepayments and prepayment speed, whereas the weighted average maturity assumes no future prepayments
d) it incorporates interest rate volatility in its calculation.

Question 7)
In a binomial interest rate tree, the interest rates at each of the relevant node points represent:

a) one-year spot rates
b) one-year forward rates
c) one-year option-adjusted spreads (OAS)
d) one-year Treasury note rates.

Question 8)
HEID106 is a mortgage passthrough security created by the Northern Property Finance Corporation by pooling together a portfolio of residential mortgage loans that it holds on properties located in the Melbourne suburb of Heidelberg. The residential mortgage loans forming the collateral pool are seasoned, on average, by 42 months, have weighted average coupon (WAC) and passthrough rates of 7.68% and 7.14%, respectively, and a projected prepayment speed of 140 PSA. The outstanding balance of the mortgage pool at the beginning of month 43 is $145 million and the scheduled combined principal payment from the collateral loan pool in month 43 is $2.5 million. Based on this information, the expected principal prepayment in month 43 (rounded to the nearest whole dollar) is:

a) $2,500,000
b) $732,879
c) $1,038,100
d) $847,875

Question 9)
The primary difference between a sequential collateralized mortgage obligation (CMO) and a mortgage passthrough security is:

a) interest payments are distributed pro-rata (equally) in a mortgage passthrough security, whereas they are distributed in a sequential order only to specific tranches in a CMO
b) prepayments on collateral loans are not allowed in a CMO structure
c) a sequential CMO protects all tranche security-holders from extension risk
d) principal payments and prepayments are distributed pro-rata (equally) in a mortgage passthrough security, whereas they are distributed in a sequential order only to specific tranches in a CMO.

Question 10)
In the presence of regular monthly prepayments being made, the monthly required combined mortgage payment from the collateral pool associated with a mortgage passthrough security will:

a) stay the same during the life of the passthrough security
b) decline over the life of the passthrough security
c) increase over the life of the passthrough security
d) either increase or decrease depending on whether the prepayment speed for the passthrough security is above or below the 100 PSA benchmark.

SOLUTION TO TUTORIAL ASSESSMENT TASK 5A

1) C
2) C
3) D
4) D
5) B
6) C
7) B
8) C
9) D
10) B