FACULTY OF COMMERCE

DEPARTMENT OF FINANCE

MASTER OF SCIENCE IN FINANCE AND INVESTMENTS

PART II FINAL EXAMINATION– NOVEMBER 2015

STRUCTURED FINANCE [CFI 5216]

TIME ALLOWED: 3 HOURS

INSTRUCTIONS TO CANDIDATES

1. Answer **Question One** and any **THREE (3)** others.

INFORMATION FOR CANDIDATES

1. This paper contains **SIX (6)** questions.
2. Question One is **COMPULSORY** and carries a total of **25 marks**.
3. All full questions carry a total of **25 marks** each and part marks are indicated in brackets at the end of each part question.
4. This paper contains **EIGHT (8)** printed pages.
5. Show all workings.
6. Write neatly and legibly.

QUESTION ONE (COMPULSORY)-25 MARKS

For Questions 1.1 to 1.10, write the letter corresponding to your chosen answer

Questions 1.1 to 1.3 are based on the following information:

Two CMO structures are created from a pool of mortgage pass-through securities with a principal value of $100 000 000. The first structure is a sequential pay structure with three tranches, A (senior-$70 000 000), B (mezzanine-$20 000 000), and Z (accrual-$10 000 000). The second structure is a PAC structure with two tranches, C (PAC tranche-$60 000 000) and D (support tranche-$30 000 000).

1.1. Which of the following statements is *least* correct about the two CMO structures?

A. The senior tranche in the sequential pay structure has less credit risk than the senior tranche in the PAC structure

B. Both structures utilize subordination as a credit enhancement.

C. The senior tranche in the PAC structure has more subordination than the senior tranche in the sequential pay structure.

1.2. Which of the following statements is *most* correct about the credit enhancement in the two structures?

A. The PAC has overcollateralization but the sequential pay does not.

B. The PAC has more internal credit enhancement than the sequential pay.

C. The sequential pay has more external credit enhancement than the PAC.

1.3. Which of the following statements is *least* correct about the prepayment risk of the two structures?

A. The PAC has less prepayment risk than the sequential pay.

B. The PAC tranche has less contraction risk than the senior tranche in the sequential pay.

C. The support tranche in the PAC structure has more average life variability than the mezzanine tranche in the sequential pay.

1.4. Which of the following statements about the Z-spread and the OAS is *least* correct?

A. The Z-spread for MBS is always higher than the OAS.

B. The OAS for option-free corporate bonds is always equal to the Z-spread.

C. The Z-spread for agency MBS is always lower than the OAS for non-agency MBS.

1.5. Which of the following statements is *least* correct?

A. Non-agency MBS require more credit enhancements than agency MBS.

B. Credit risk is lower in agency MBS than in non-agency MBS, but prepayment risk is higher in agency MBS.

C. Prepayment risk is normally independent of whether an MBS is an agency issue or a non-agency issue.

1.6. Which of the following statements is *least* correct about asset securitization?

A. Asset securitization always requires third-party guarantees.

B. Asset securitization increases balance sheet liquidity.

C. The pillars of asset securitization are pooling, delinking, and tranching.

1.7. Which of the following is *most* useful in managing political risk in project finance?

A. Loans from multilateral banks

B. Direct intra-company loans from a foreign parent company

C. Equity from a foreign sponsor

1.8. Which of the following statements *best* describes project finance?

A. Non-recourse corporate debt

B. Financing backed by the corporate cash flows of the sponsor

C. Off-balance sheet financing backed by project cash flows and project assets.

1.9. Which of the following is *least* to favor project finance?

A. Negative co-insurance between corporate cash flows and project cash flows

B. Negative correlation between project and corporate cash flows

C. High project risk

1.10. Which of the following statements *best* describes reversal risk in asset securitization?

A. The potential for recourse by investors to corporate cash flows in case of deterioration in quality of collateral assets.

B. The potential for recourse by general creditors of the originator to collateral assets in case of the originator’s bankruptcy.

C. The potential that the ABS may be bought back by the SPV because it cannot meet interest payments.

For Questions 1.11 to 1.25, use ‘T’ or ‘F’ to indicate whether each of the following statements is True or False.

1.11 Market value CDOs normally involve trading of collateral. **True/False**.

1.12 Compliance tests in CDOs protect investors against prepayment risk. **True/False**.

1.13 Cash arbitrage-driven CDOs often result in higher returns on the equity tranche than synthetic arbitrage-driven CDOs. **True/False**.

1.14 Project finance is less appropriate if on-balance sheet debt would result in a debt overhang. **True/False**.

1.15 High free cash flow induces project managers to engage in wasteful expenditure but reduces exposure to expropriation risk. **True/False**.

1.16 An increase in project productivity reduces the value of the put option held by project sponsors and increases the value of risky project debt. **True/False**.

1.17 Future flow securitization has more stable cash flows than asset securitization. **True/False**.

1.18 Legal de-linking of collateral is achieved via a true sale of collateral assets to any type of SPV. **True/False.**

1.19 Project debt is normally more expensive than corporate debt because lenders have no recourse to project assets. **True/False**.

1.20 Direct expropriation risk is higher for projects financed using on-balance sheet debt than for projects financed using project finance. **True/False**.

1.21 A subsidiary that is controlled by the originator may be used to effectively de-link collateral assets from the credit risk of the originator. **True/False**

1.22 A liquidity support provider does not cover shortfalls caused by default on the collateral. **True/False**

1.23 Rating shopping decreases with increasing standardization of rated products. **True/False.**

1.24 Prepayment options on MBS are path dependent therefore the Monte Carlo Simulation model is ideal for calculating OAS. **True/False**.

1.25 A credit rating of AAA on any structured security means that the security is risk-free because it has the same credit rating as a US Treasury security. **True/False.**

QUESTION TWO

(a) Explain how adverse selection may affect the risk profile of Residential Mortgage-Backed Securities (RMBS). **[4]**

(b) Examine the significance of warranties and representations given by originators in asset securitization. **[6]**

(c) An investor is considering two bonds for investment purposes: bond A is a AAA-rated CMO tranche and bond B is an option-free AAA-rated corporate bond. The following information is available on the two bonds:

Bond	**Z-spread (basis points)**	**OAS (basis points)**	**Effective duration**
A	122	97	5.5
B	101	?	5.5

Based only on the above information, which of the two bonds should the investor buy? Why? **[6]**

(d) Briefly define the following terms as used in structured finance:

(i) Commingling risk **[3]**

(ii) Bankruptcy remoteness **[3]**

(iii) Early amortization trigger **[3]**

Total [25]

QUESTION THREE

(a) State and explain any **TWO** requirements for a true sale in asset securitization. **[4]**

(b) Zimbabwean banks have struggled to contain nonperforming loans, diversify loan portfolios, and increase balance sheet liquidity for the past 4 years.

(i) Explain how nonperforming loans have affected banking sector liquidity in Zimbabwe. **[4]**

(ii) Critically examine the role of the Zimbabwe Asset Management Company (ZAMCO) in the resolution of non-performing loans in Zimbabwe. **[15]**

(iii) Why is it important to exclude insider loans in the on-going NPL resolution by ZAMCO? **[2]**

Total [25]

QUESTION FOUR

(a) In the past 10 years, a lot of attention has been given to diamond mining in the Chiadzwa area in Zimbabwe. As an analyst in a large American mining company you are tasked to produce a risk report on a proposed project financing structure for a new diamond mining operation in the Chiadzwa area. Your report is expected to analyze mainly political and market risks for the project and propose appropriate risk management strategies. Prepare a brief preliminary analysis of appropriate content for the report. **[12]**

(b) How does the use of large amounts of risky debt contribute to the management of agency problems in project finance? **[5]**

(c) A pool consisting of 30-year mortgage loans has an outstanding principal balance of $200 000 000. The average coupon rate for the pool is 12% p.a. and the weighted average maturity is 28 years. The pool is expected to prepay at 160PSA.

(i) Calculate the scheduled payment for this month. **[2]**

(ii) Calculate the expected prepayment for this month. **[3]**

(iii) Calculate the excess prepayment if the pool actually prepays at 180PSA this month. **[3]**

Total [25]

QUESTION FIVE

(a) Read the attached Korean case study and attempt the following questions:

(i) Explain the significance of the put option banks to the rating of the issuer notes. **[2]**

(ii) State and explain any **TWO** reasons why the sovereign rating of the Korean government was important to this transaction. **[6]**

(iii) Explain how credit and liquidity risks are mitigated in the deal. **[8]**

(iv) Identify any **THREE** features that distinguish the Korean deal from the typical/ideal asset securitization deal. **[3]**

(b) Credit enhancements are a critical part of asset securitization in the context of non-performing loans. In view of the state of the Zimbabwean banking and insurance sectors, and the financial condition of the Treasury, discuss any **TWO** credit enhancement options available to Zimbabwean banks and credit companies should they consider adopting asset securitization. **[6]**

Total [25 marks]

QUESTION SIX

(a) Explain how the following factors affect the appropriateness of project finance:

(i) Project risk **[4]**

(ii) Corporate debt capacity **[4]**

(iii) Proprietary value of project **[4]**

(iv) Co-insurance benefits **[4]**

(b) Consider the following CDO transaction:

1. The CDO has collateral assets worth $150 million.
2. The collateral consists of bonds that all mature in 10 years and the coupon rate for every bond is the 10-year Treasury rate plus 400 basis points.
3. The senior tranche comprises 70% of the structure ($105 million) and pays interest based on the following coupon formula: LIBOR plus 120 basis points.
4. There is only one mezzanine tranche ($20 million) with a coupon rate that is fixed. The coupon rate is the 10-year Treasury rate plus 150 basis points.
5. The asset manager enters into an agreement with a counterparty in which it agrees to pay the counterparty a fixed rate each year equal to the 10-year Treasury rate

plus 110 basis points and receive LIBOR. The notional amount of the agreement is $105 million.

Required:

(i) How much is the equity tranche in this CDO? **[1]**

(ii) Assume that the 10-year Treasury rate at the time the CDO is issued is 6%. Assuming no defaults, calculate:

a. Interest received from the collateral
b. Interest received from the swap counterparty
c. Interest paid by the CDO to the senior tranche
d. Interest paid by the CDO to the mezzanine tranche
e. Interest paid by the CDO to the swap counterparty
f. Net cash flow to the equity tranche.

[6]

(iii) Ignoring asset management fees, calculate the return to the equity tranche.

[2]

Total [25]

END OF EXAMINATION PAPER