NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

B. COMM (HONOURS) DEGREE INSURANCE & RISK MANAGEMENT

FINANCIAL RISK MANAGEMENT : CIN 4205

JUNE 2004 SECOND SEMESTER EXAMINATION

DURATION : 3 HOURS

INSTRUCTIONS TO CANDIDATES

- Answer all questions
- Formulae sheet is at the back of the examination paper

Question 1

Briefly define the following terms:

(a)	Bullet immunization	**[2 marks]**
(b)	Yield pick up swap	**[2 marks]**
(c)	Periodic gap	**[2 marks]**
(d)	Interest rate risk	**[2 marks]**
(e)	Credit risk	**[2 marks]**
(f)	Market risk	**[2 marks]**
(g)	Settlement risk	**[2 marks]**
(h)	Off-balance-sheet risk	**[2 marks]**
(i)	Technology risk	**[2 marks]**
(j)	Solvency risk	**[2 marks]**

[Total 20 marks]

Question 2

Suppose you are given the following information about a bank balance sheet:

Face Value	Maturity	Coupon (% p.a.)	YTM % p.a.
Assets			
$3.5m	2 yrs	6 %	5%
Liabilities			
$2m	6 months	1%	5%
$1m	3 months	1%	4%

N.B. – Coupons and YTMs are given per annum.

- Assets and liabilities are book value

(b) What is the market value of assets? **[4 marks]**

(b) What is the market value of liabilities? **[4 marks]**

(c) What is the duration of assets? **[4 marks]**

(d) The interest rate is 5%, what is the value of assets if the interest rate increases by 1%? **[4 marks]**

(e) What is the duration of liabilities? Use the weighted average method based on market value weights. **[4 marks]**

[Total 20 marks]

Question 3

(a) What are the components of risk management policies? **[5 marks]**

(b) You are a USD-based corporation and hold a DEM 140 million FX position. What is your VAR over a 1-day horizon given that there is a 5% chance that the realized loss will be greater than what VAR projected?

- Glehange rate is 1.40 DEM/USD
- DEM/USD daily standard deviation is 0,565% **[5 marks]**

[Total 10 marks]

Question 4

	Expected return	Standard deviation
Bonds Fund	40%	50%
Equity Fund	65%	70%
Money Market	20%	0%

The correlation coefficient between the Bond Fund and the Equity Fund is 0,45. The investors risk aversion factor is A = 3

a) Find the optimal risky portfolio, P, its expected return and standard deviation. **[10 marks]**

b) Find the slope of the CAL supported by the money market fund and portfolio P. **[2 marks]**

c) Find the complete portfolio, C, consisting of the money market fund, the Equity Fund and the Bond Fund. Calculate its expected return and standard deviation. **[10 marks]**

d) Illustrate your solution with a pie chart and a CAL (not drawn to scale). **[3 marks]**

[Total 25 marks]

Question 5

a) Briefly state and explain the four types of Bond Portfolio risk. How can these risk types be minimized. **[8 marks]**

b) A client approaches you with the following bond portfolio investment requirements:

- Amount to be invested 10 000 000
- Investment horizon 5 years
- Minimum return required 19.11%p.a.

Assuming the yield to maturity on default and call free government bonds with 5 years maturity is 22.6%, suggest a strategy for immunizing the investment against downside interest rate risk which leaves the upside potential open. **[10 marks]**

c) A bond portfolio manager expects interest rates to fall. How can she make speculative profit from this expectation. **[2 marks]**

[Total 25 marks]

END OF EXAMINATION PAPER!!

FINANCIAL RISK MANAGEMENT FORMULAE

1. $\sigma_C = Y\sigma_P$

2. $Y_0 = \dfrac{E(R_P) - Rf}{0.01A\sigma^2 p}$

3. E(Rc) = R*f* + y[E(Rp) – R*f*]

4.

$$WD = \frac{[E(R_D) - Rf]\sigma^2{}_E - [E(R_E) - Rf]Cov(R_{D,}R_E)}{[E(R_D) - Rf]\sigma^2{}_E + [(R_E) - Rf]\sigma^2 - [E(R_D) - R_f + E(R_E) - Rf]Cov(Rd, R_E)}$$

5. $rij = \dfrac{Cov(Ri, Rj)}{\sigma_A\sigma_B}$