

**FACULTY OF COMMERCE
DEPARTMENT OF FINANCE
BACHELOR OF COMMERCE HONOURS DEGREE IN FINANCE
PART I – 2nd SEMESTER SUPPLEMENTARY EXAMINATION – JULY 2003
FINANCIAL MATHEMATICS II [CFI 1201]
TIME ALLOWED : 3 HOURS**

Instruction

1. Answer 4 out of 6 question
2. Calculator may be used.
3. Each question carries 25 marks.
4. Show all workings.

Question 1

A local government department wishes to embark on a project with the following cashflows:

Time [years]	Cashflow [\$]
0	-80 000
1	-10 000
2	10 000
3	35 000
4	135 000

Assuming it can borrow at 18% p.a., whereas for an investment of comparable risk it can expect to invest at 20% p.a:

- a. Calculate the present value of the cash outlay. [7 marks]
- b. Calculate the future value of the cash inflows at the end of the project [7 marks]
- c. Calculate the **MIRR**. What are the pitfalls of this technique? [11 marks]

Question 2

- a. List and briefly explain the conditions for parity in money and foreign exchange markets. [7 marks]
- b. What are the functions of a foreign exchange market? Would you describe the Zimbabwean foreign exchange market as fully functional? Discuss. [18 marks]

Question 3

- a. What is the current value of a counter to an investor who requires a 12% annual rate of return, if next year's dividend, D_1 is expected to be \$3.00 per share, and dividends are expected to grow at an annual rate of 4% for the foreseeable future? [10 marks]

- b. What would be the counter's value should dividends be expected to be \$3.00 indefinitely [that is assuming the no growth model] [10 marks]
- c. Which model is more realistic? Discuss [5 marks]

Question 4

- a. An investor wishes to purchase a mine, which is expected to yield a net annual return of \$3 000 000 for the next 15 years. The investor requires an annual return of 14% on the investment, and is able to establish a sinking fund, earning 12 per annum, that must accumulate to the amount of the purchase price over the life of the mine. How much should he be willing to pay? [10 marks]
- b. **“Providing for a sinking fund on a bond issue benefits the investor”.** Do you agree? Discuss [15 marks]

Question 5

- a. You are given the following information on the counter Innscor.

Coupon	11% per annum
Yield to maturity	15.61% per annum
Maturity date	1 June 2021

Assuming coupons are paid semi annually on the same day as the maturity date, that is 1 June and 1 December.

Calculate the all in price, accrued interest, and the clean price, given the following settlement dates:

- a. 31 March 2003 [13 marks]
- b. 15 May 2003 [12 marks]

Question 6

Compare and contrast the net present value method and the internal rate of return method of discounting cashflows. Which would you prefer? [25 marks]