HERBET CHITEPO SCHOOL OF LAW AND BUSINESS SCIENCES

DEPARTMENT OF ECONOMICS AND FINANCE

MAIN EXAMINATION

BACHELOR OF COMMERCE	PART 1 SEMESTER 2
COURSE	FINANCIAL MATHEMATICS
CODE	HBF 125
DATE	2024
DURATION	3 HOURS

INSTRUCTIONS TO CANDIDATES

1. THE PAPER COMPRISES 5 QUESTIONS.
2. YOU ARE REQUIRED TO ANSWER ANY FOUR QUESTIONS.
3. BEGIN THE ANSWER TO EACH QUESTION ON A FRESH PAGE OF THE ANSWER BOOKLET.
4. NON-PROGRAMMABLE FINANCIAL OR SCIENTIFIC CALCULATORS ARE ALLOWED INTO THE EXAMINATION.
5. CANDIDATES WILL OBTAIN CREDIT FOR SHOWING ALL WORKINGS.

Question 1

Financial markets, financial intermediaries and financial regulators are the key components that make up the financial system. Explain the role of each of these within the Zimbabwean financial system.

Question 2

2.1 At an interest rate of 10%, what is present value of $1m to be received in:

i.	10 years	(3 marks)
ii.	50 years	(2 marks)
iii.	100 years	(2 marks)
iv.	150 years	(2 marks)

2.2 A paper company invests $4m to clear a tract of land and plant some young pine trees. The trees will mature in 10 years, at which time the forest will have a market value of $8m. What is the expected rate of return for the paper company's investment? (5 marks)

2.3 A small-scale businessman deposits money into his savings account at the beginning of each year, depending on the returns of the business. He deposits $1000 in the first year, $2000 in the second year, $5000 in the third, and $7000 in the fourth year. The account credits interest at an annual interest rate of 7%. What is the closest value of the accumulated money in the savings account at the beginning of year 4? (6marks)

2.4 A stock pays a constant dividend of $8 at the end of each year for 20 years at a 25% required rate of return. Calculate the present value of the stock dividends. (5 marks)

(25 marks)

Question 3

3.1 LinG Motors' bonds have 10 years remaining to maturity. Interest is paid annually, the bonds have a $1,000 par value, and the coupon interest rate is 8 percent. The bonds have a yield to maturity of 9 percent. What is the current market price of these bonds? (5 marks)

3.2 Define each of the following terms:

i.	Convertible bond	(4 marks)
ii.	Zero coupon bond	(4 marks)
iii.	Junk bond	(4 marks)
iv.	Reinvestment rate risk	(4 marks)
v.	Default risk	(4 marks)

(25 marks)

Question 4

Identify and describe any 4 money market instruments, highlighting how they are valued as well as the advantages and disadvantages of using each. **(25 marks)**

Question 5

A project has a cost of capital of 15% and the following cashflows:

Year	Project LKP
0	(20,000)
1	5,000
2	5,000
3	5,000
4	5,000
5	5,000

Determine:

i. Discounted/Modified Pay Back Period (5 marks)

ii. Net Present Value (5 marks)

iii. Discuss non-financial factors to consider when evaluating projects. (15 marks)

(25 marks)