STRATHMORE BUSINESS SCHOOL
BACHELOR OF FINANCIAL SERVICES
END OF SEMESTER EXAMINATION
AMS 3101: PENSION FUND MANAGEMENT

DATE: Wed, 31st July 2024 **TIME:** 08:00 – 10:00

Instructions

1. This examination consists of **FIVE** questions.
2. Answer **Question ONE (COMPULSORY)** and any other **TWO** questions.
3. Workings must be shown where applicable.

Question One **(30 marks)**

a. Blue Ltd operates two pension schemes for their employees, half of the employees are in the Defined Benefit scheme (DB) and the other half in the Defined Contribution scheme (DC). Moses is the fund manager of the DB scheme where 60% of the employees are retired and are paid monthly and the rest with an average age of 52 years still make contributions monthly. The retirement age for Blue Ltd is 60years. This fund is closed, and new employees can only join the DC scheme. Jane is the fund manager of the defined contribution pension scheme where the average age of the employees is 40 years, and the first employee will retire in 20 years' time. All the employees who are members of this scheme contribute monthly.

   i. Distinguish between a defined benefit plan and a defined contribution scheme. **[4 marks]**
   ii. Which manager should pursue a passive investment strategy and who should pursue an aggressive investment strategy? **[2 marks]**
   iii. Explain **two** reasons for each choice selected **[4 marks]**

b. Blue Ltd wishes to evaluate the performance of the two managers using either the time weighted returns or the money weighted returns.

   i. Which measure should be used to evaluate Moses and why? **[5 marks]**
   ii. Which measure should be used to evaluate Jane and why? **[5 marks]**

c. Assume that a fund manager purchases one share of stock for shs.42.50. Exactly one year later, the share is worth shs.44 and the company pay a dividend of shs.1.00 per share. This is followed by two more annual dividends of shs.1.5 and shs.2.75 in successive years. At the end of the second year the share price falls back to shs.42.50 and upon receiving the third dividend, the investor sells the share for shs50.

i. Calculate the annualized time weighted rate of return. **[5 marks]**
ii. What is the money weighted rate of return? **[5 marks]**

Question Two (20 marks)

a. Highlight the importance of a money market to a pension fund manager **[2marks]**
b. The fund manager of a pension scheme wishes to invest in one of the following money market securities:
   1. A 180-day commercial paper with a face value of shs.1million selling for shs. 975,000
   2. A 182-day treasury bill selling for shs. 980,000 with a par value of shs1million.

The fund will hold the security purchased to maturity.

Required:

i. What is the yield to maturity of each security? **[4 marks]**
ii. Which security should the fund manager purchase? **[1 mark]**
iii. Provide three reasons for selecting the security in (ii) above. **[3 marks]**

c. The interest rates in the economy have been rising steadily in the last two years and are projected to continue rising in the next two years. The fund manager wishes to invest in one of the following long-time securities, the pension scheme is exempted from taxation:

	Bond 1	Bond 1
Type	Treasury bond	Corporate bond
Term to maturity	5years	3years
Coupon rate	16.5%, semiannually	15.5% annually
Par value	Shs.1million	Shs.1million
Yield to Maturity (YTM)	18%	14%

Required:

i. What is the current price of each bond? **[4 marks]**
ii. The risk of default for the two bonds has been rated as low by a rating agency, however, explain **two** other possible risks that each bond poses to the pension scheme. **[4 marks]**
iii. If you were the fund manager, which bond would you purchase, why? **[2marks]**

Question Three (20 marks)

a. The government of Kenya has introduced several pension products such as the Mbao Pension Scheme, targeting the informal sector yet the pension uptake in this sector is still low when compared to the formal sector.

Required:

i. Highlight the challenges that members in this sector face that prevent them from taking up pension products. **[6 marks]**
ii. Discuss the mechanisms that the government can adopt to increase the uptake of pension to this sector. **6 marks]**

b. Assume you are the owner of a business with 50 employees, each of whom now receives compensation of shs.1.2million a year. You have signed a pension contract with the employees promising to pay a yearly individual pension benefit equal to 20% of the retiring employee ‘s compensation during his last year of employment. This retirement benefit will be paid at year end during each year of the employee’s retirement until the employee dies. A pension investment portfolio has been set up to help pay these future benefits. At present the portfolio has a market value of shs.7million. In order to calculate the expected benefit payments and required contributions a number of assumptions need to be made:

- Salary growth- 7% per year
- Mortality rate: post-retirement-15 years after retirement
- Termination rate- no one leaves employment until retirement in 30 years.
- Years to retirement- Everyone will retire in 30 years.
- Postretirement benefit increases: None
- Investment returns- 15% per year after inflation
- Funding method- Annual annuity sufficient to fully fund by retirement.

Required:

i. What is the desired portfolio value of the firm? **[4 marks]**

ii. Is the current portfolio value sufficient to meet the needs of part a **[2 marks]**

iii. If the firm wishes to make year-end annuity contributions to its investment portfolio, what must the contribution be? **[2 marks]**

Question Four (20 marks)

a. Briefly describe the role of the following players in the pension industry:

i. Actuary **[2 marks]**

ii. Trustee **[3 marks]**

iii. Custodian **[2 marks]**

iv. Fund manager **[3 marks]**

d. Simon is chief financial officer (CFO) of Umeme Connections, a rapidly growing highly profitable energy company based in Nairobi. The company has a defined contribution pension scheme for its employees. Because of Umeme’s young workforce with an average age of 28years, Simon believes the pension plan has no liquidity needs and can thus invest aggressively to maximize returns. He also believes that low yielding short term investments such as Treasury bills and Fixed deposits, respectively, have no place in a portfolio with such a long-time horizon. His strategy, which has produced excellent returns for the past two years, has been to invest the portfolio as follows:

- 50 percent in a concentrated pool (10 to 15 stocks) of Blue-Chip companies in the Financial, Telecommunications and Manufacturing sector in Kenya and in the other EAC countries.
- 40 percent in long term high yielding government bonds in Kenya which have a high return of 13% and above.
- 5 percent in a venture capital fund.
- 5 percent in an international equity fund.

Simon assures you that these limits comply with RBA regulations. The contribution scheme is registered with KRA and thus its investment income is exempted from taxation.

Required:

Simon has asked you to draft Umeme's investment policy statement which should include the following:

i. Return requirements.
ii. Risk tolerance.
iii. Time horizon
iv. Liquidity requirements
v. Unique needs and circumstances **[10 marks]**

Question Five (20 marks)

Amana Pension is a large pension fund with assets valued at over 10billion shillings. The fund administrator is concerned about the various risks that the fund faces and has provided you with the following information to help with the risk assessment:

Rental Income

The fund owns two high rise Grade A mixed used buildings. The first building is in the Central Business District, has twenty-two floors. The ground and the top floor are fully let to a restaurant and two coffee houses. The rest of the building is used as a private car park, mainly leased to private companies monthly, the building is currently fully let.

The second building is in Westlands, has twenty floors of office space, fully let to both private and public companies. The building is very modern and uses green technology and is thus highly sought after by companies. All the tenants are on 3-year leases and pay rent on a quarterly basis and service charge monthly. Both buildings are insured against the usual risks such as fire, theft, floods, and personal injury. However, the fund administrator wants a thorough analysis of other operational risks as rental income from these two buildings accounts for 30% of the income of the fund.

a. List three other operational risks apart from the insured risks that each building may face which can adversely affect the rental income of the fund. **[6 marks]**
b. How can these risks be mitigated? **[3 marks]**

Investment Income

One year ago, the fund invested in a 30-year Kes 1 billion fixed income bond, the bond pays semi-annual coupons. The pension fund wishes to receive variable rate coupons and wants to swap its interest receivable with Green Ltd who desires to invest in a fixed income bond. The following information relating to the two companies have been provided:

	Fixed rate	Floating rate
Amana Pension	15%	CBR
Green Ltd	16%	CBR

c. Design a swap that will net a bank acting as intermediary 0.5 percent per annum and be equally attractive to both the companies. **[5 marks]**
d. Highlight the disadvantages to Amana Pension of using a swap to hedge interest rate risk. **[6 marks]**