



# MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

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## UNIVERSITY EXAMINATIONS 2023/2024

THIRD YEAR, SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR  
OF SCIENCE IN ACTUARIAL SCIENCE

### SMS 3380: PENSION MATERIALS AND BENEFITS SCHEME

DATE: APRIL 2024

TIME: 2 HOURS

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**INSTRUCTIONS: Answer Question ONE and any other TWO questions.**

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#### QUESTION ONE (30 MARKS)

- State clearly three main benefit providers in Kenya [6 Marks]
- Explain the factors that affects the cost of a benefits scheme [4 Marks]
- Describe what is meant for a pension scheme to integrate State pension benefits in the scheme's benefits. [4 Marks]
- Describe, in your own words, the process involved in carrying out an asset liability model exercise for a large defined benefit scheme. [5 Marks]
- State the information that may need to be disclosed in a company's financial statements in relation to their defined benefit pension scheme. [5 Marks]
- Describe the other factors that may influence the value quoted by the insurer. [6 Marks]

#### QUESTION TWO (20 MARKS)

- Discuss the roles of the State, employers and individuals as providers of benefits? [10 Marks]
- Explain the factors that influence the choice of benefit design [10 Marks]



MUST is ISO 9001:2015 and



ISO/IEC 27001:2013 CERTIFIED

### QUESTION THREE (20 MARKS)

A member of a defined contribution pension scheme is considering their options on retirement, including using their fund at retirement to purchase an annuity with an insurance company.

- i. Describe the potential risks arising from an annuity purchase. [5 Marks]

The member is considering purchasing units in an alternative retirement product. Under this arrangement: once an initial investment is made, a policyholder is not permitted to increase or decrease the number of units held. the unit price is determined monthly for each individual policyholder based on mortality: the unit price multiplied by the probability of survival of the policyholder equals the value of any expected cash distributions from other policyholders over the next month. whenever a policyholder dies, their units are released and the funds are distributed to other policyholders as a cash payment. The cash is distributed in proportion to the value of units held. Cash distribution happens on a monthly basis. all funds are invested based on a pre-defined strategy, and unit values also change monthly for all policyholders in line with the underlying investment performance (subject to an annual management charge of 0.5% p.a.).

- ii. Compare the risk profile of this alternative arrangement to an annuity purchase. [7 Marks]

A third option for the member is to invest their accumulated fund at retirement into a drawdown product with an insurance company. The product consists of a number of different drawdown funds that an investor can choose between.

- iii. Describe the factors that should be considered in setting an appropriate investment strategy for a drawdown fund. [8 Marks]

### QUESTION FOUR (20 MARKS)

The managers of a defined benefit pension scheme are reviewing the terms for determining transfer values that members will receive if they take their accrued benefits from the scheme. The managers had reviewed the commutation factors earlier in the year.

- a) Describe the key areas to consider when setting transfer value terms. [6 Marks]  
b) Explain how the assumptions for calculating transfer values may differ from the scheme's funding basis. [4 Marks]



A deferred member of the scheme has requested a transfer value quotation.

- c) List the individual member data items required to calculate the transfer value. [4 Marks]
- d) Describe possible reasons why the member has requested a transfer value quotation. [6 Marks]

### **QUESTION FIVE (20 MARKS)**

- a) Describe the key areas of scheme design where pension schemes may differ. [10 Marks]
- b) Suggest possible reasons why the scheme designs differ. [5 Marks]

Two large vehicle manufacturers, Titan Motor Company (Titan) and Bullet Cars (Bullet), operate in the same country. Each manufacturer sponsors its own defined benefit pension scheme that is open to new entrants and to future accrual. Both companies employ manual workers, engineers and designers and are run by directors. Titan is considering acquiring Bullet, and its directors have requested a copy of Bullet's company accounts. Bullet's pension scheme will form part of the acquisition.

- c) Describe the key items of information from these accounts, in relation to Bullet's pension scheme, that will be of interest to Titan's directors. [5 Marks]

