



# THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

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**MAIN EXAMINATION**

**MAY – JULY 2019 TRIMESTER**

**FACULTY OF SCIENCE**

**DEPARTMENT OF MATHEMATICS AND ACTUARIAL SCIENCE**

**REGULAR PROGRAMME**

**ACS 100: INTRODUCTION TO ACTUARIAL SCIENCE**

**Date: JULY 2019**

**Duration: 2 Hours**

**INSTRUCTIONS: Answer Question ONE and any other TWO Questions**

- Q1. a.) Define the following terms as used in actuarial practice
- (i) Life table
  - (ii) Pension
  - (iii) Actuary
  - (iv) Life assurance
  - (v) Claim
- (5 marks)**
- b.) Discuss the major drawbacks to the development of the actuarial practice in Kenya
- (4 marks)**
- c.) State the roles of TASK in Kenya today
- (5 marks)**
- d.) An insurance company has 100 insured taking a policy from an insurer. The chance of an accident taking place is 0.01. If each insured gives a premium of 13,000 per year and the cost of a car of every policyholder is 1 million. Calculate the profit/loss made by the insurer from such a policy.
- (4 marks)**
- e.) Explain meaning of reinsurance
- (2 marks)**
- d.) Discuss the two basic types of reinsurance in the modern Kenya
- (3 marks)**
- e.) Explain any two types of pension common in the Kenyan market
- (4 marks)**

- f.) State the types of expenses that an insurance company that incur when operating in the Kenyan market

**(4 marks)**

- Q2. a) The actuarial profession has defined acceptable approaches to certain Tasks carried out by actuaries in professional standards. Which are some of the matters covered in these standards?

**(5 marks)**

- b) Which assumption do we make when assessing the probability of ruin for insurance company

**(5 marks)**

- c) State and briefly explain some of the most important insurance company operations

**(6marks)**

- d) Explain why ethics and professionalism is important when practicing as an actuaryin Kenya

**(4 marks)**

- Q3 a) Fill in the table below **(5 marks)**

Age $x$	$l_x$	$d_x$	$p_x$	$q_x$
30	94726			
31			0.99839	
32	94425			0.00167
33		164		
34			0.99817	
35		182		

Using the table;

- (i.) What is the proportion aged 31 expected to live to age 35 **(3 marks)**

- (ii) What is the average number of persons who might be expected to die between age 31 and 35 out of 3000 persons aged 30 now **(5 marks)**

- b) Using the actuarial life tables, what is the chance that a male child born to a mother aged 31 and a father aged 33 will live be alive 2 years but orphaned by both parents **(7 Marks)**

- Q4. a) Discuss the five principles of insurance

**(10 marks)**

- b) What are the requirement of risks for it to be insurable?

**(5 marks)**

- c) State roles of actuaries in enterprise risk management (5 marks)

**QUESTION FIVE (20 MARKS)**

- Q5. a) Briefly explain property insurance, casualty insurance and motor insurance (10 marks)
- b) State and briefly explain products of life insurance (10 marks)

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