



MURANG'A UNIVERSITY OF TECHNOLOGY

SCHOOL OF PURE AND APPLIED SCIENCE

DEPARTMENT OF APPLIED SCIENCE

UNIVERSITY ORDINARY EXAMINATION

2017/2018 ACADEMIC YEAR

**FIRST YEAR SECOND SEMESTER EXAMINATION FOR DEGREE OF
BACHELOR OF SCIENCE IN ACTUARIAL SCIENCE**

AMC 101 – INTRODUCTION TO ACTUARIAL SCIENCE

DURATION: 2 HOURS

DATE: 24TH APRIL, 2018

TIME: 9.00 – 11.00 A.M.

Instructions to Candidates:

1. Answer **Question 1** and **Any Other Two** questions.
2. Mobile phones are not allowed in the examination room.
3. You are not allowed to write on this examination question paper.

SECTION A – ANSWER ALL QUESTIONS IN THIS SECTION

QUESTION ONE

- a) Outline the roles of actuaries in investment/financial services sector (3 marks)
- b) Discuss the concept of underwriting as used in insurance, explaining why it is necessary to perform underwriting while writing new contracts (3 marks)
- c) What do you understand by the term ‘actuarially fair insurance’? (2 marks)
- d) One characteristic feature of temporary term insurance contracts is that they are convertible once they expire. Explain two methods of conversion commonly used. (4 marks)
- e) Giving a suitable illustration, explain the terms “Poor Risk” and “Acceptable Risk” as used in insurance (2 marks)
- f) An insurance contract is a legally binding document between various parties and participants. Discuss, giving suitable illustrations, the various parties and participants in a:
 - i. Life insurance contract
 - ii. General insurance contract (4 marks)
- g) Discuss the major drawbacks to the development of the insurance industry in Kenya (3 marks)
- h) Discuss five objectives of financial management in a business setting (5 marks)
- i) What are the main roles of the Insurance Regulatory Authority (IRA) in Kenya? (4 marks)

SECTION B – ANSWER ANY TWO QUESTIONS IN THIS SECTION

QUESTION TWO

- a) Discuss in details four key principles that form the basis of financial management (8 marks)
- b) Outline the benefits in socio-economic terms of an active well-developed insurance industry in Kenya (6 marks)
- c) Distinguish between the following terms as used in insurance:
 - i. Sum assured versus face amount
 - ii. Paid-up policy versus surrender value
 - iii. Maturity date versus expiration date (6 marks)

QUESTION THREE

- a) The Actuarial Control Cycle (ACC) is a specific business model which describes the fundamental nature of actuarial work. With the aid of a diagram, explain in details the steps followed in the ACC (7 marks)
- b) Insurers often perform an investigation of the events leading to a claim on a policy. Explain the reasons why this is necessary (3 marks)
- c) Discuss six characteristic features that insurers generally require so as to accept to provide cover for given risks (6 marks)
- d) Discuss briefly the history of insurance including how it started and its development to date. (4 marks)

QUESTION FOUR

- a) Risk refers to uncertainty regarding future events, various methods are applied in an attempt to manage risk in business. Discuss giving suitable examples three ways that actuaries use in managing risk through non-insurance transfers (6 marks)
- b) Differentiate giving suitable examples, between:
- Fundamental risk and particular risk
 - Objective risk and subjective risk (4 marks)
- c) Discuss three broad decision functions of a financial manager in a business (6 marks)
- d) What is a life table? How are life-tables constructed? (4 marks)

QUESTION FIVE

- a) The following is an extract from the English life table No.15 males

Age(x)	l_x	d_x
40	20,000	35
41	19,965	38
42	19,927	42
43	19,885	46
44	19,839	50
45	19,789	55
46	19,734	61

Evaluate the following life contingency functions from the table above:

- i. l_{47} (1 mark)
 - ii. $5p_{42}$ (1 mark)
 - iii. $5q_{41}$ (2 marks)
 - iv. The probability that a life currently aged 41 will die between exact ages 43 and 46 (3 marks)
- b) Distinguish between life insurance and life assurance covers (2 marks)
- c) Explain why insurers generally insure only pure risks (2 marks)
- d) What are the distinguishing features of whole life insurance and endowment insurance contracts?
Give your answers with regard to premium payment, benefits payment and timing of payments (6 marks)
- e) Give 3 ethical practices that professional actuaries are expected to uphold (3 marks)