**JOMO KENYATTA UNIVERSITY**

**OF**

**AGRICULTURE AND TECHNOLOGY**

**UNIVERSITY EXAMINATIONS 2017/2018**

**FIRST YEAR FIRST SEMESTER EXAMINATION FOR THJE DEGREE OF**

**BACHELOR OF SCIENCE IN ACTUARIAL SCIENCES**

**STA 2190: FUNDAMENTALS OF ACTUARIAL SCIENCE**

**DATE: JANUARY 2018 TIME:2 HOURS**

**INSTRUCTIONS TO CANDIDATES:**

1. *Answer questions ONE (section A)and any other two questions in section B*
2. *Be neat and show all your workings*
3. *All questions except question one carry equal marks*

**Question one (20 marks)**

1. Define the actuarial control cycle. (2 marks)
2. Describe the role played by actuaries in the following areas
3. Financial management (2 marks)
4. General insurance (2 marks)
5. Pension fund scheme (2 marks)
6. Differentiate between compound and simple interest rates. (2 marks)
7. State the four characteristics of insurable risks. (4 marks)
8. Mr. Kamau insured a building worth sh. 800000 with two insurers A and B. He insured sh. 200000 with A and sh. 500000 with B. During a fire incidence, he incurred a loss of 320000. Calculate the amount of compensation from each insurer. (5 marks)
9. After how long will sh. 45000 accumulate to shs. 64000 at a rate of interest of 8% p.a compounded semi- annually? (6 marks)
10. State and briefly explain 5 types of actuaries. (5 marks)

**SECTION B**

**Question Two (20 marks)**

1. Discuss any four insurance principles. (8 marks)
2. Briefly explain three types of general insurance (6 marks)
3. Discuss three classes of insurance (6 marks)

**Question three (20 marks)**

1. What is a pension scheme? (2 marks)
2. Discuss three types of pension schemes (6 marks)
3. Explain how the government acts as a regulator of pension schemes (6 marks)
4. Explain the roles played by actuaries in pension schemes (6 marks)

**Question four (20 marks)**

1. The annual rate of interest is 5% p.a. Calculate:
2. The corresponding nominal annual rate of interest payable quarterly (3 marks)
3. The corresponding annual rate of discount payable semi-annually (3 marks)
4. Differentiate between insurable and non- insurable risks, giving examples in each case. (4 marks)
5. Define the term risk and explain how risk can be quantified mathematically. (4 marks)
6. Discuss three carrier paths under the study of actuarial science. (6 marks)s