MURANG'A UNIVERSITY OF TECHNOLOGY

SCHOOL OF BUSINESS AND ECONOMICS

DEPARTMENT OF COMMERCE

UNIVERSITY ORDINARY EXAMINATION

2020/2021 ACADEMIC YEAR

THIRD YEAR **SECOND** SEMESTER EXAMINATION FOR BACHELOR OF SCIENCE IN ACTURIAL SCIENCE

AMC 306– FINANCIAL ECONOMICS

DURATION: 2 HOURS

Instructions to candidates:

1. Answer question One 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 (30 MARKS)

a) Utility Theory is based on the premise that people can consistently rank order their choices depending upon their preferences. Explain the axioms on which the utility Theory is founded.

(10marks)

b) Asset Managers make problem- solving decisions under different conditions.
Discuss the three conditions that influence investment decision making. (6marks)

c) Differentiate between systematic risk and unsystematic risk. (4marks)

d) Distinguish between futures contracts and forward contracts. (4marks)

e) Given the following information, use Arbitrage pricing Theory to calculate the expected return.

Factor	Beta	Risk premium
GDP	0.6	4%
Inflation Rate	0.8	2%
Gold prices	-0.7	5%
NSE	1.3	9%

The risk free Rate is 3% (6marks)

SECTION B – ANSWER ANY TWO QUESTIONS IN THIS SECTION

QUESTION TWO (20 MARKS)

a) The modern portfolio theory relies on some strong assumptions.
Describe the strengths and the weakness of the assumptions (10marks)

b) given the following the following information
The underlying assets is priced at 127.98, Exercise price is Kshs. 127, the risk free Rate 5%, time to expiration 3 months, standard deviation is 0.14, divided yield is 1.7%.
Use the adjusted black-Scholes model to calculate:

(i) Call option price (6marks)

(ii) Put option price (4marks)

QUESTION THREE (20 MARKS)

a) Given

$ds = \mu dt + \sigma dz$

$dG(s,t) = \frac{\partial G}{\partial t}.dt + \frac{\partial G}{\partial s}.ds + \frac{1}{2}\frac{\partial^2 G}{\partial s^2}.ds^2.\sigma^2$

(I To- lemma process)

Required: obtain the process of

(i) $G(s,t) = S$ (2marks)

(ii) $G(s,t = S^2$ (4marks)

(iii) $G(s,t) = Ins$ (4marks)

b) Financial Economics necessities familiarity with basic probability and statistics. Explain the significance of studying financial economics.   (10marks)

QUESTION FOUR (20 MARKS)

a) Given a stock has the following information $X_0 = 100$. $dt = 0.02$, $\mu = 0.55$, Time = 2yrs standard deviation $(\sigma) = 0.2$

The stock follows the arithmetic Brownian motion process;

$dxt = \mu dt + \sigma dz$

Calculate:

(i)   Expected value (dXt)   (2marks)

(ii)   Expected value (Xt)   (2marks)

(iii)   Standard deviation (dXt)   (3marks)

(iv)   Standard deviation (Xt)   (3marks)

b) Explain the following term as used in Financial Economics.

(i)   Asset portfolio   (2marks)

(ii)   Martingale process   (2marks)

(iii)   Static hedge   (2marks)

(iv)   Expected Return   (2marks)

(v)   Capital Asset pricing model   (2marks)