



# **MAASAI MARA UNIVERSITY**

## **REGULAR UNIVERSITY EXAMINATIONS 2020/2021 ACADEMIC YEAR THIRD YEAR SECOND SEMESTER**

### **SCHOOL OF BUSINESS AND ECONOMICS BACHELOR OF SCIENCE IN FINANCIAL ECONOMICS**

**COURSE CODE: ECF 3204**

**COURSE TITLE: ASSET PRICING**

DATE: 14<sup>TH</sup> OCTOBER, 2021

TIME: 1430 – 1630HRS

---

#### **INSTRUCTIONS TO CANDIDATES**

Answer question **ONE** and any other **THREE** questions

*This paper consists of 3 printed pages. Please turn over*

**QUESTION ONE [25 MARKS]**

- a) Define the following terms in relation to asset pricing
- i. Marking to market [1 Mark]
  - ii. Arbitrage [1 Mark]
  - iii. Par value [1 Mark]
- b) Identify the difference in the risk measures used in the capital market line(CML) and the security market line(SML) [3 Marks]
- c) Explain what is meant by the diversifiable and non-diversifiable risk of a share. How does the expected return depend on each of these two types of risk under the capital asset pricing model? [5 Marks]
- a) Given two securities A and B, with  $V_A$ ,  $V_B$  and  $C_{AB}$  representing the variance of asset A, variance of asset B and co-variance between asset A and B respectively. Show that the minimum variance occurs when the proportion invested in security A ( $X_A$ ) is: [6Marks]
- $$X_A = \frac{V_B - C_{AB}}{V_A - 2C_{AB} + V_B}$$
- d) The price of coffee is currently sh.500 per kg. The forward price for delivery in one year is sh.700 per kg. One can also borrow money at 10% per annum. Assume that the cost of storing coffee is zero. How can Peter take advantage of this and make a risk free profit? [5 Marks]
- e) Explain why the term to maturity of a bond is important with respect to bond valuation [3 Marks]

**QUESTION TWO[15 MARKS]**

- a) Consider a portfolio consisting of equal holdings of 2 securities. You have the following information about the securities:
- The return on security one is equally likely to be 5% or 10 %
- The return on security two is equally likely to be 10% or 20 %.
- Evaluate the following
- i. Calculate the means and standard deviations of each individual security [4 Marks]
  - ii. Calculate the mean and variance of the portfolio as a whole given that the correlation coefficient of the two securities is 1,0 and -1 [7 Marks]
- b) Outline the features of a bond [4 Marks]

**QUESTION THREE [15 MARKS]**

- a) A non-dividend paying stock is currently priced at  $S_0$ . Over the next two and three month periods it is expected to go up by 6% or down by 5% on each period. The continuously compounded risk free rate is 5% per annum.
- i. Calculate the value of a six month European call option with a strike price of shs.82 [6 Marks]
  - ii. Calculate the value of a six month European put option with a strike price of shs.82 using both the direct method and the put-call parity. [4 Marks]
- b) State the assumptions underlying the modern portfolio theory [5 Marks]

**QUESTION FOUR[15 MARKS]**

- a) Discuss the differences between forward contracts and futures contracts. [6 Marks]
- b) A 1 year long forward contract on a non-dividend paying stock is entered into when the stock price is \$40 and the risk-free rate of interest is 10% with continuous compounding.
- i. What is the forward price and the initial value of the forward contract? [4 Marks]
  - ii. Six months later, the price of the stock is \$45 and the risk-free interest rate is still 10%. What are the forward price and the value of the forward contract? [5 Marks]

**QUESTION FIVE [15 MARKS]**

- a) State and briefly explain at least three risks associated with investing in bonds. [6 Marks]
- b) A fixed interest stock with a coupon of 8% per annum payable annually in arrears can be redeemed at the option of the lender at any time between 10 and 15 years from the date of issue. What price should an investor subject to tax at 25% on income, who wishes to obtain a net yield of at least 7% per annum, pay for KSh.100 nominal of this stock? [4 Marks]
- c) You are given the following information about three stocks that are in your portfolio. In addition, you know that the market portfolio has an expected return of 13% and a standard deviation of 18%. The risk free rate is 5%.

Stock	Beta	Weight in portfolio
A	1.1	20%
B	0.8	50%
C	1.0	30%

What is the expected return on your portfolio?

[5 Marks]

END//