MAASAI MARA UNIVERSITY

REGULAR UNIVERSITY EXAMINATIONS
2021/2022 ACADEMIC YEAR
THIRD YEAR FIRST SEMESTER

SCHOOL OF BUSINESS AND ECONOMICS
BACHELOR OF SCIENCES IN FINANCIAL ECONOMICS

COURSE CODE: ECF 3104
COURSE TITLE: THEORY OF FINANCE

DATE: 28TH MARCH, 2022 TIME: 0830-1030

INSTRUCTIONS TO CANDIDATES

1. **Answer Question ONE and any other three questions**

. Please turn over.

Question 1

a) Define the following terms as used in finance:

i) Moral hazards (1 mark)

ii) Primary financial markets (1 mark)

iii) Information asymmetry (1 mark)

iv) Idiosyncratic risk (1 mark)

v) Holding period return (1 mark)

b) Suppose a three-factor model is appropriate to describe the returns of a stock. Information about those three factors is presented in the following chart. Suppose this is the only information you have concerning the factors.

Factor	Beta of Factor	Expected Value	Actual Value
GNP	0.0042	\$4,416	\$4,480
Inflation	-1.40	3.1%	4.3%
Interest Rate	-0.67	9.6%	11.8%

i) What is the systematic risk of the stock return? (3 marks)

ii) Interpret the GNP beta, and interest rate beta (2 marks)

iii) Suppose an unexpected bad news about the firm was announced that dampens the returns by 2.6 percentage points. What is the unsystematic risk of the stock return? (1 mark)

iv) Suppose the expected return of the stock is 9.5 percent. What is the total return on this stock? (2 marks)

c) Explain any 3 potential solutions to agency conflicts in the public sector. (6 marks)

d) Discuss any 2 differences between the Capital Asset Pricing Model (CAPM) and the Arbitrage Pricing Theory (APT) (6 marks)

Question 2

a) Jensen and Meckling (1976) in the Agency Theory explain a number of ways in which agency conflicts may arise. Explain any 3 of these ways. (6 marks)

b) Explain any 3 aspects of agency costs (6 marks)

c) Define the three forms of market efficiency (3 marks)

Question 3

a) Differentiate between dividend yield and percentage return on a stock investment (2 marks)

b) Suppose a stock begins the year with a price of \$25 per share and ends with a price of \$35 per share. During the year it paid a \$2 dividend per share. What are its dividend yield, its capital gain, and its total return for the year? (3 marks)

c) The returns on the market of common stocks and on Treasury bills are contingent on the economy as follows

Economic Condition	Probability	Market Return (%)	Treasury Bills (%)
Recession	0.25	-8.2	3.5
Normal	0.50	12.3	3.5
Boom	0.25	25.8	3.5

i) Calculate the expected returns on the market and Treasury bills (2 marks)

ii) Calculate the expected risk premium (1 mark)

d) The returns on the small-company stocks and on the blue-chip company stocks from 2016 through 2020 are tabulated below.

Year	Small-Company Stocks (%)	Blue-Chip Company Stocks (%)
2016	47.7	40.2
2017	33.9	64.8
2018	-35.0	-58.0
2019	31.0	32.8
2020	-0.5	0.4

i) Calculate the average return for the small-company stocks and the Blue-Chip Company stocks. (2 marks)

ii) Calculate the variance and standard deviation of returns for the small-company stocks and the Blue-Chip Company stocks. (5 marks)

Question 4

a) Draw the security market line for the case where the market-risk premium is 5 percent and the risk-free rate is 7 percent. (4 marks)

b) Suppose that an asset has a beta of -1 and an expected return of 4 percent

i) Plot it on the graph you drew in part (a) (4 marks)

ii) Is the security properly priced? If not, explain what will happen in this market. (1 mark)

c) Suppose you have invested $30,000 in the following four stocks:

Security	Amount Invested ($)	Beta
Stock A	5,000	0.75
Stock B	10,000	1.10
Stock C	8,000	1.36
Stock D	7,000	1.88

The risk-free rate is 4 percent and the expected return on the market portfolio is 15 percent. Based on the CAPM, what is the expected return on the above portfolio? (6 marks)

Question 5

a) You own stock in Vertex Pharmaceuticals (a Covid-19 vaccine manufacturing company). Explain what would occur to the stock prices in the event that the following hypothetical events occurred.

i) The president of the firm would announce her retirement. The retirement would be effective six months from the announcement day. The president is well liked: in general, she is considered an asset to the firm (2 marks)

ii) Lab researchers had a breakthrough with another drug that increases the company's products portfolio. (2 marks)

iii) Interest rates would rise 2.5 percentage points. The returns of Vertex Pharmaceuticals are negatively related to interest rates. (2 marks)

iv) A competitor announced that it will begin distribution and sale of a medicine that will compete directly with one of Le Vertex Pharmaceuticals' vaccine. (2 marks)

v) In an ordinary sitting of the African Union presidents, a consultant demonstrates how effective the vaccine is and promotes its use. (2 marks)

b) You are conducting a cumulative average residual study on the effect of airline companies' buying new planes. The announcement dates for the purchase of the planes were July 18 (7/18) for Delta, February 12 (2/12) for United, and October 7 (10/7) for American. Construct a cumulative abnormal return (CAR) for these stocks as a group, chart it, and explain it. All stocks have a beta of 1 (5 marks)

Delta			United			American		
Date	Market Return	Company Return	Date	Market Return	Company Return	Date	Market Return	Company Return
7/12	-0.3	-0.5	2/8	-0.9	-1.1	10/1	0.5	0.3
7/13	0.0	0.2	2/9	-1.0	-1.1	10/2	0.4	0.6
7/16	0.5	0.7	2/10	0.4	0.2	10/3	1.1	1.1
7/17	-0.5	-0.3	2/11	0.6	0.8	10/6	0.1	-0.3
7/18	-2.2	1.1	2/12	-0.3	-0.1	10/7	-2.2	-0.3
7/19	-0.9	-0.7	2/15	1.1	1.2	10/8	0.5	0.5
7/20	-1.0	-1.1	2/16	0.5	0.5	10/9	-0.3	-0.2
7/23	0.7	0.5	2/17	-0.3	-0.3	10/10	0.3	0.1
7/24	0.2	0.1	2/18	0.3	0.3	10/13	0.0	-0.1

SOME FINANCIAL ECONOMICS FORMULAE

✓ **APT Model**	$\boldsymbol{R = \overline{R + m + \epsilon}}$
✓ Beta	$\boldsymbol{\beta_i = \dfrac{Cov(R_i, R_M)}{\sigma^2(R_M)}}$
✓ CAPM	$Expected\ return = r_f + \beta(r_m - r_f)$ Where: $r_f = risk - free\ rate, \beta = beta, and\ r_m = return\ on\ the\ market$

✓ Expected Portfolio Return	$(\hat{R}_P) = W_1X_1 + W_2X_2 + \cdots + W_nX_n \equiv \sum_{i=1}^{n} W_iX_i$
✓ Future value of a Single Cash Flow	$Future\ value = PV\ (1+r)^n$
✓ Future Value of an Annuity Due	$FVAND_n = PMT\left[\frac{(1+i)^n - 1}{i}\right](1+i)$
✓ Future Value of an Ordinary Annuity ($FVAN_n$)	$FVAN_n = PMT[\frac{(1+i)^n - 1}{i}]$
✓ Portfolio Standard Deviation	$\delta(portfolio) = \sqrt{X_A^2\delta_A^2 + 2X_AX_B\delta_{AB} + X_B^2\delta_B^2}$
✓ Present Value of a Single Cash Flow	$PV = \frac{\boldsymbol{FV_n}}{\boldsymbol{(1+i)^n}}$
✓ Present Value of Annuity Due	$PVAD = PMT\left[\frac{1 - \frac{1}{(1+i)^n}}{i}\right](1+i)$
✓ Present Value of Ordinary Annuity	$PVOA = PMT\left[\frac{1 - \frac{1}{(1+i)^n}}{i}\right]$
✓ **Security return correlation**	$\rho_{AB}\ \frac{Cov_{R_A,R_B}}{\sigma_A \times \sigma_B}$
✓ **Security return covariance**	$Cov_{R_A,R_B} = \sum P_i(R_A - \bar{R}_A)(R_B - \bar{R}_B)$ or $\sum \frac{(R_A - \bar{R}_A)(R_B - \bar{R}_B)}{N}$
✓ Value of the Levered firm	$V_L = \frac{EBIT(1-T_C)}{r_0} + T_CB$
✓ Value of the Unlevered Firm	$V_u = \frac{EBIT(1-T_C)}{r_0}$

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