KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2017/2018

FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF ECONOMICS

EAE 414: THEORY OF FINANCE

DATE: WEDNESDAY 7TH FEBRUARY 2018 **TIME: 11.00 A.M. - 1.00 P.M.**

INSTRUCTIONS: **Answer QUESTION ONE (compulsory) and any other TWO questions. Question one carries 30 marks and the rest carry 20 marks each.**

QUESTION ONE

a) Define the following as used in financial economics. (10 marks)

i) Security price

ii) State price

iii) 2nd order stochastic dominance

iv) Arbitrage

v) Short selling

b) After optimization, agent *i's* consumption-portfolio choice problem reduces to

$p_j = \sum x_{js} \dfrac{u_1(c_0, c_1)}{u_0(c_0, c_1)}$. Under what conditions would portfolio allocation $\{h^i\}$ and consumption allocation $\{(c_0^i, c_1^i)\}$ provide equilibrium in the security market? (6 marks)

c) Using matrix algebra show that it's valid to represent the payoffs and the price of a portfolio as hX and ph respectively. If $h = [h_1, h_2, ... h_j]$, $p = [p_1, p_2, ... p_j]$ and $X^T = [x_1, ... , x_j]$ (9 marks)

d) State and explain the implications of market completeness. (5 marks)

QUESTION TWO

a) Assuming that the law of one price holds and that there are only two periods, show that state prices $[q'(z)]$ are equal to the marginal rate of substitution between consumption in the two periods. (10 marks)

b) Suppose that γ_0 is the set all securities subject shortsale restrictions, show that

$p_j \geq \sum X_j \frac{u_1(c_0, c_1)}{u_0(c_0, c_1)} \forall \ j \in \gamma_0$. Under what circumstances would this inequality be strict? (10 marks)

QUESTION THREE

a) Define bid asks spread and state the agents consumption-portfolio choice problem with bid ask spreads. (11 marks)

b) Explain in detail any three inter-linkages between financial markets and the macro-economy. (9 marks)

QUESTION FOUR

a) Suppose we have two securities risk free debt D and stock S with state prices P_1 and P_2 respectively, two future states; one the stock s up with return u, the second the stock is down with stock return d. $d < u$ for normal stocks.

i) Construct the payoff matrix for the two securities. (4 marks)

ii) If D and S represent the value of each security, represent the above market using simultaneous equations give that;

value of security = sum [payoffs in future states x *state prices]* (6 marks)

iii) Use the information in (i) and (ii) above to derive the no arbitrage condition. (6 marks)

b) Advice an investor on what to do to be assured of profits if

i) $(1+r_f) < (1+d)$ (2 marks)

ii) $(1+u) < (1+r_f)$ (2 marks)

QUESTION FIVE

Consider the following set of returns for two risky securities X and Y

Probability	x_i %	y_i %
0.2	11	-3
0.2	9	15
0.2	25	2
0.2	7	20
0.2	-2	6

a) Find $E(x)$, $E(y)$, $var\ (x)$ and $var\ (y)$ (8 marks)

b) Calculate the covariance and complete the following table given the percentage of wealth invested in each security. $E(R_p)$ and $\sigma(R)$ are expected portfolio returns and standard deviation of portfolio returns respectively. (8 marks)

Percentage in X	Percentage in Y	$E(R_p)\%$	$\sigma(R)=\sqrt{\text{var}((R_p))}$
100	0		
75	25		
50	50		
25	75		
0	100		

c) Use the findings in (b) above to demonstrate the usefulness of diversification in hedging. (4 marks)

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