CONFIDENTIAL

UNIVERSITI KUALA LUMPUR
BUSINESS SCHOOL

FINAL EXAMINATION
OCTOBER 2024 SEMESTER

COURSE CODE	:	**EGB30103**
COURSE NAME	:	**FINANCIAL ECONOMICS 2**
PROGRAMME NAME	:	**BACHELOR OF SCIENCE (HONS) IN ANALYTICAL ECONOMICS**
DATE	:	**14 FEBRUARY 2025**
TIME	:	**3.00 PM – 6.00 PM**
DURATION	:	**3 HOURS**

INSTRUCTIONS TO CANDIDATES

1. **Please CAREFULLY read the instructions given in the question paper.**
2. **This question paper has information printed on both sides of the paper.**
3. This question paper consists of **SIX (6) Questions.**
4. Answer **ALL** questions.
5. Please write your answers on the answer booklet provided.
6. All questions must be answered in **English** (any other language is not allowed).
7. **This question paper must not be removed from the examination hall.**
8. Formulas have been appended for your reference.

THERE ARE FIVE (5) PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

INSTRUCTION: Answer ALL questions.

Please use the answer booklet provided.

Question 1

(a) Describe what is meant by mean absolute deviation.

(3 marks)

(b) Discuss two (2) measures in measuring risk.

(6 marks)

(c) Explain four (4) axioms in defining coherent risk measures.

(12 marks)

Question 2

Assume that the market has an expected return of 12% and volatility (risk or standard deviation) of 20%. Suppose the CAPM accurately describes the data one is using. IBM has a 0.90% correlation with the market and 50% volatility. The risk-free rate is 3%.

(a) Determine the covariance between IBM and the market.

(4 marks)

(b) Identify IBM's beta.

(4 marks)

(c) Determine the expected return on IBM.

(4 marks)

(d) Determine the percentage of IBM's total variance risk which is specific (nonsystematic).

(4 marks)

(e) Discuss three (3) limitations of the CAPM model.

(9 marks)

Question 3

Suppose portfolio P's expected return is 14%, its volatility is 30% and the risk-free rate is 2%. Suppose further that's a particular mix of asset i ad P yields. A portfolio P' with an expected return of 22% and a volatility of 40%. Will adding asset *i* to portfolio P be beneficial? Explain.

(6 marks)

Question 4

Assume the risk-free rate is 4%. You are a financial advisor and your client has decided to invest in exactly one of two risky funds, A and B. She comes to you for advice. Whichever fund you recommend she will combine it with the risk-free asset. Expected returns are $\overline{R}_A = 13\%$ and $\overline{R}_B = 18\%$. Volatilities are $\sigma_A = 20\%$ and $\sigma_B = 30\%$. Without knowing your client's tolerance for risk, which fund would you recommend? Explain.

(4 marks)

Question 5

(a) Describe futures contract.

(3 marks)

(b) Differentiate between linear and non-linear payoff derivative instruments.

(6 marks)

(c) Discuss four (4) assumptions for a forward contract using the arbitrage principles.

(12 marks)

Question 6

(a) Explain financial leverage.

(3 marks)

(b) Discuss two (2) analysis in measuring a project's stand-alone risk.

(8 marks)

(c) Discuss three (3) reasons why it is useful to incorporate risk into the net present value (NPV) using the certainty-equivalent approach.

(12 marks)

FORMULA

Future Value

$$FV = PV(1+i)^n$$

Effective Annual Rate

$$EFF(APR, m) = \left(1+\frac{APR}{m}\right)^m - 1$$

- Where;

APR = annual percentage rate
m = the number of compounding periods per year

Present Value

$$PV_{FV}(FV, i, n) = \frac{FV}{(1+i)^n}$$

Utility Function

$$U = E(r) - \frac{1}{2}A\sigma^2$$

Where;

U = utility

E (r) = expected return on the asset or portfolio

A = coefficient of risk aversion

s^2 = variance of returns

½ = a scaling factor

Expected Return of the complete portfolio

$$E(r_c) = r_f + y\left[E(r_P) - r_f\right]$$

Variance

$$\sigma_C^2 = y^2\sigma_P^2$$

Slope/Sharpe ratio

$$Slope = \frac{E(r_P) - r_f}{\sigma_P}$$

Two-Security Portfolio Return

$$E(r_p) = w_D E(r_D) + w_E E(r_E)$$

Two-Security Portfolio: Risk

$$\sigma_p^2 = w_D^2\sigma_D^2 + w_E^2\sigma_E^2 + 2w_D w_E Cov(r_D, r_E)$$

Single Factor Model

$$r_i = E(r_i) + \beta_i m + e_i$$

Single Index Model Regression Equation

$$R_i(t) = \alpha_i + \beta_i R_M(t) + e_i(t)$$

Expected Return Beta Relationship

$$E(R_i) = \alpha_i + \beta_i E(R_M)$$

Variance Single-Index Model

$$\sigma_i^2 = \beta_i^2\sigma_M^2 + \sigma^2(e_i)$$

Covariance Single-Index Model

$$Cov(r_i, r_j) = \beta_i\beta_j\sigma_M^2$$

Portfolio Variance

$$\sigma_P^2 = \beta_P^2\sigma_M^P + \sigma^2(e_P)$$

Portfolio sensitivity

$$\beta_P = \frac{1}{n}\sum_{i=1}^{n}\beta_i$$

Market Risk Premium

$$E(R_M) = \bar{A}\sigma_M^2$$

Where

$\bar{A}$ = investors risk aversion

σ_M^2 = variance of the market portfolio

CAPM

$$E(r_M) = r_f + \beta_M\left[E(r_M) - r_f\right]$$

Multifactor Model Equation

$$r_i = E(r_i) + \beta_{iGDP}GDP + \beta_{iIR}IR + e_i$$

Multifactor SML Models

$$E(r_i) = r_f + \beta_{iGDP}RP_{GDP} + \beta_{iIR}RP_{IR}$$

Bond Pricing

$$P_B = \sum_{t=1}^{T} \frac{C_t}{(1+r)^t} + \frac{ParValue}{(1+r)^T}$$

P_B = Price of the bond
C_t = interest or coupon payments
T = number of periods to maturity
r = semi-annual discount rate or the semi-annual yield to maturity

Yield to Maturity

Yield to Maturity (YTM) = [Annual Coupon + (FV − PV) ÷ Number of Compounding Periods)] ÷ [(FV + PV) ÷ 2]

Holding Period Return

$$Holding\ Period\ Return = \frac{Income + (End\ Of\ Period\ Value - Initial\ Value)}{Initial\ Value}$$